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WARD'S MACHINE FOR TURNING IRREGULAR FORMS.

The mechanical contrivances which the busy thinking-powers are continually producing are oft-times truly wonderful, and command admiration and attention from the most unlearned of their purpose and object, by the quickness and neatness with which they throw off their work.

Our engraving represents two machines invented by Richard Ward, of Naugatuck, Conn., who is since deceased, and they are now extensively used throughout many parts of the country; and, judging from the working model which we have examined, they turn out spokes with great rapidity, and a finish which excels any hand-made spoke. The knives or cutters can be arranged to cut any form. The simple method o obtaining the requisite motion of the "stuff," to have the proper oval and taper, is ingenious in the extreme, and there are so few parts to perform such a great variety of work that it is not likely to get out of order or easily become damaged.

The first machine (Fig. 1) is for turning the oval of the spoke. A series of knives, A, are arranged between circular plates and placed on a shaft that runs across the frame, B. These knives are rapidly rotated by a belt from the shafting of the shop in which the machine is placed. The stuff is placed between the clamps, *a* and *b*; *a* being capable of being driven up to hold the stuff, and then being locked by a cam, *c*, that tightens around the square shaft of *a*, and prevents it from sliding back; *b* is double, and its shaft is round, so that it is capable of rotating rotating in bearings, *d*, and it carries to receive the necessary motion a wheel, *e*, at its back. At the side of the machine is a drum, C, that can be rotated from any point that may be convenient; from this a belt, D, passes to a drum, E, on the frame, and the shaft of this carries a small bevel-wheel that rotates *e* on the shaft of E; there is also a loose pulley, *f*. The whole of these contrivances are placed on a plate, F, which slides on the main frame, and which can be moved back and forth to present the stuff to the knives or bring it back, by a lever that is pivoted at one end to B and connected by a link to F. The width of the drum, E, is so arranged that when the stuff is away from the knives the belt, D, is on the loose pulley, *f*, so that the stuff is not rotated; but the moment that the stuff is moved forward to the cutters, the band, D, moves forward on to E, and the stuff is rotated. To obtain the oval from the piece of wood that is to be formed into a spoke, it has to be moved back and forth before the knives while it is being rotated, and this is effected in a very ingenious manner. The supporters or bearings of the clamps, *a* and *b*, are placed on a plate, H, that is allowed to slide in an arc of a circle upon the plate, F, and it is centered by a pivot, *g*, which can be moved to give any taper to the oval that may be desired. The motion is given to this plate by a lever, *h*, pivoted to the wheel, *e*, so that it gives a reciprocating motion to a plate, *i*, that moves in guides on H, and by a system of levers, *f*, connected with and secured to F, it receives the proper motion to form the oval on the spoke.

When the oval portion of the spoke is formed, the cam, *c*, is released, and *a* driven back; the spoke is taken out and placed in the clamps, *b'*, *a'*, on the machine (Fig. 1), which cuts the hub-tenon on the spoke. The cutters, I, are arranged on a large cylinder, J, the shaft of which carries a bevel-wheel, K, that gears with a similar one, K', at right angles to it; and on the shaft of K', by means of a rebate, another bevel-wheel, L, is allowed to slide and give motion to the clamp, *e*, by the bevel-wheel on the back of its shaft, when connected by the connecting-gear that we will now describe. The bevel-wheel is loose on the shaft of *e*, and to the frame of the machine a small stud, *m*, is attached, which holds back the clutch by a lever, *n*; but when the clamp-bed, is moved forward by the handle, *o*, and crank, *p*, *n* is released from the stud, and a spring, *g*, forces the clutch into a slot or recess in the back of the bevel-wheel, and the stuff is rotated before the cutters to have the square tenon formed.

For any further information address Palmer & Co., box 4,534, Post-office, New York.

Fig. 1

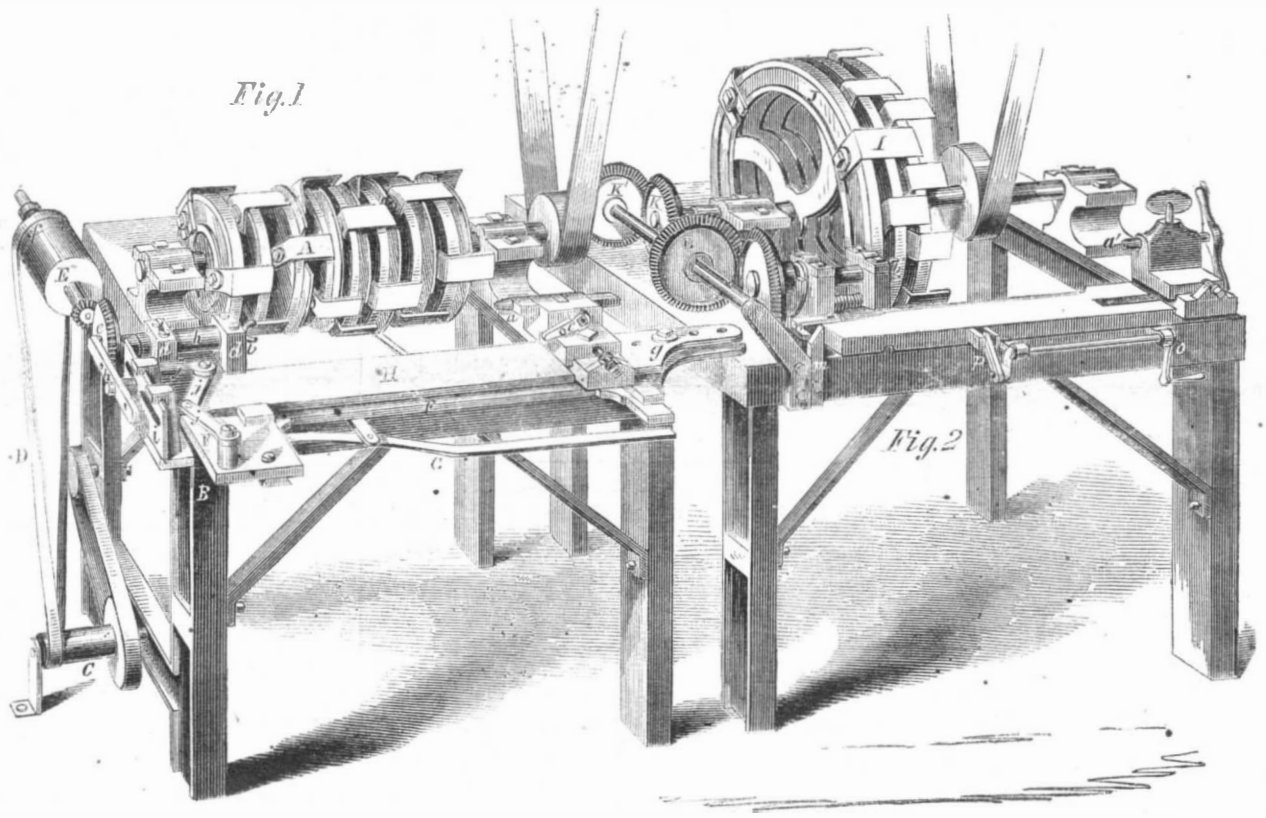

Fig. 2

WARD'S MACHINE FOR TURNING IRRREGULAR FORMS.

LIFE-PRESERVING SHIP BERTHS.

Of all the horrible calamities which can befall men or women, perhaps the accidents which sometimes happen to "those who go down into the sea in ships" are the most terrible. The vast number of human beings, fighting with a power they do not understand, drowning themselves often by their own struggles for life, the wife sinking before a husband's eyes, and the child's struggles growing feebler while the mother is looking on powerless and unable to assist, all tend to add to the agony of such moments, and call up an involuntary shudder when they are recounted. How thankful then we should be for any invention which has for its end the preservation of life at sea, and the protection of passengers from the consequences of accident on the "waste of waters." Such is the invention of H. Hallock, of Brookhaven, L. I., and Isaac Smith, of No. 139 West Twenty-first-street, New York. They make the state-room, containing any desired number of berths, distinct from the vessel, with the deck above capable of opening, so that in case of accident, the door of the state-room can be securely closed and be watertight, and the state-room rises through the deck and floats—a perfect life-boat—on the surface of the water. Chambers are provided for water and provisions, light is admitted, and the interior is well ventilated, the air being admitted and allowed to escape without any water accompanying it. A pump is provided in case of leakage and to keep the proper quantity of water in the bottom chamber to serve as ballast. It can be lighted at night.

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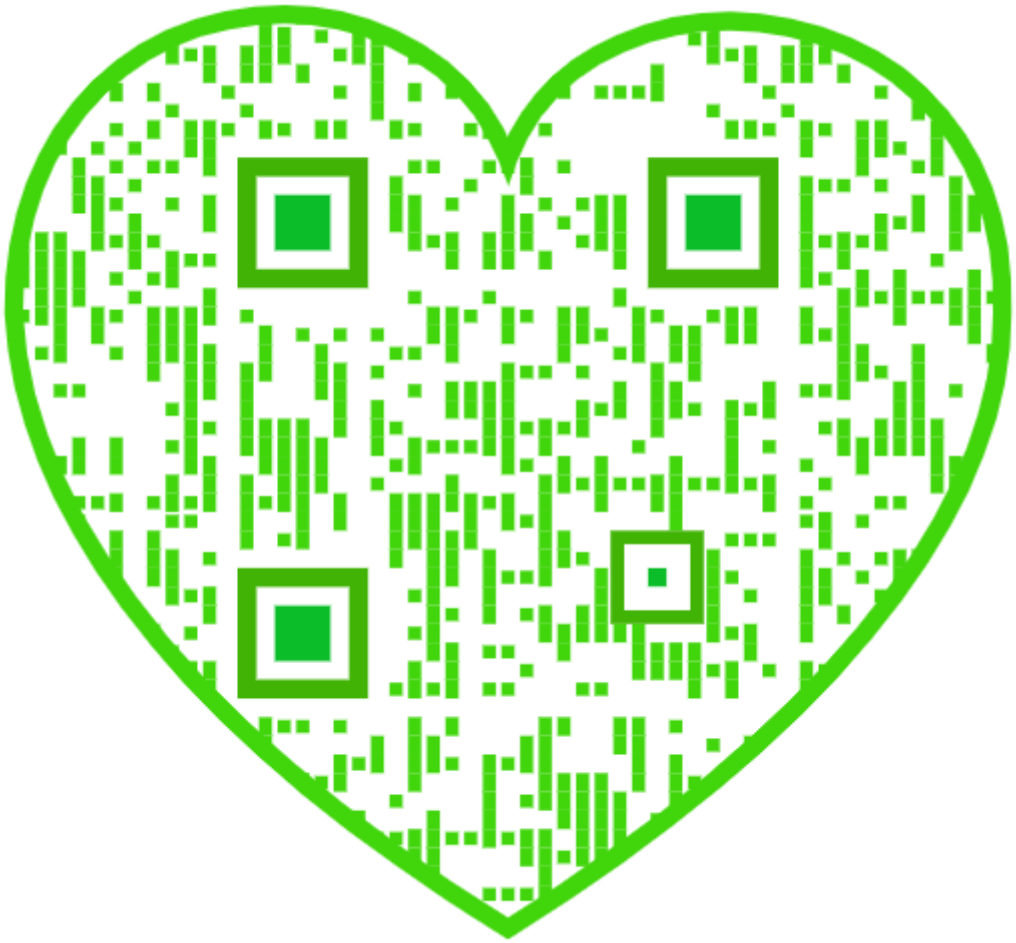

SIR DAVID BREWSTER.

While we are recognizing the claims of "the mighty dead" whose discoveries in science have shed such a luster on the page of history, we mean not to neglect the living, but shall take frequent occasion to present their names and merits before our readers. The lives of living statesmen, generals, historians and novelists, which are oftentimes brought before the public with a flourish of trumpets, do not deserve such a conspicuous place in the eyes and hearts of the people as those of men who, by their scientific discoveries and inventions, have contributed so much to extend the boundaries of intercourse and promote the comfort and happiness of life. The name which stands at the head of this article is well known throughout the civilized world; it stands high on the scroll of fame; and yet there are not many persons who know much about the man himself—what he is, or where he is.

Sir David Brewster was born at Jedburgh, Scotland, in 1781. His parents were in very moderate circumstances, but with toiling and economy—national characteristics—they managed to assist him to a collegiate education, with the intention of his becoming a Presbyterian minister. He was a bright and diligent student, and at nineteen years of age took the degree of A. M. in Edinburgh, and attracted the attention of such men as Professors Robertson and Dugald Stewart, for his scientific attainments. In such pursuits he soon became so eminent that he was selected to the editorship of the "Edinburgh Encyclopedia," which he conducted from 1808 up to 1830—twenty-two years. During this period he devoted himself with such success to optics that he became the most profound writer in the world on this science, and he made a great number of original discoveries in prosecuting his studies. While writing the article on "burning glasses" for the "Encyclopedia," he was led to suggest that the construction of lenses out of zones of glass, each of which might be made in several segments, would make an apparatus of unequaled power for throwing the light to a great distance in light-houses. This important invention was of great benefit to the public and gained great honor to its author. He soon afterwards received honorary degrees from several scientific associations, was admitted a member of the Royal Society, and awarded the Copley medal. In 1816 he invented that popular philosophical toy, the *kaleidoscope*, which, by the mere adjustment of a few pieces of colored glass, causes very beautiful and striking effects to be produced on the vision. It is stated that one maker in London made a fortune by the manufacture of these toys, owing to their popularity and the very great demand for them after the method of their construction was made public. It is well known, however, that the author of it never made a cent by his invention in his own country; the French Institute, in Paris, awarded him the prize of 3,000 francs, and this was all he got, we believe.

In 1819 he made some very remarkable discoveries on the polarization of light, and for these the Royal Society awarded him both the gold and silver Rumford medals. In 1825 he was elected a corresponding member of all the scientific bodies on the continent of Europe, and in 1831 he received the order of knighthood from William the Fourth, with a pension of £300 per annum. On the death of the great chemist, Berzelius, a few years since, he was elected in his place, as one of the select eight foreign associate members of the French Academy. This honor was coveted by the most illustrious philosophers, because it is only conferred after the most rigid examination of the scientific qualifications of candidates. On this occasion several names were presented for the honor, but they were all withdrawn as a mark of acknowledged respect to Brewster.

As an author he is a most agreeable and interesting writer. He treats the most intricate scientific and mechanical subjects with the skill of a master, and throws into them such a vivid simplicity that his treatises have all become very popular. He is the translator of Euler's letters on philosophy, and is the biographer of Sir Isaac Newton. Whatever topic he has touched he has left the impress of an original genius upon it.

He is a very regular contributor to some of the Reviews; has written largely and well on photography; has laid down the laws for the proper construction of the stereoscope, and it is expected that he will present several papers on these subjects at the meeting of the British Scientific Association, to be held at Aberdeen next month. It is a pleasure to know that such a veteran philosopher and Nestor of science has been a constant advocate of rational freedom and representative government; and that he has devoted much time and the energies of his mind for the benefit of the working classes, especially in advocating the necessity of superior houses for them, as it regards light and ventilation.

He is now in his seventy-eighth year, and in the course of nature has not many days to fullfil on earth; but for that very reason we thought it well to give this brief account of him, while he is still among the living. He is not a man of wealth, but has sufficient for all his wants. He resides in the city of Edinburgh, is a devout Christian, and is esteemed the most eminent living philosopher in Great Britain.

TIRES FOR RAILROAD WHEELS WITHOUT ANY VISIBLE JOINTS.

Quite a number of tires are manufactured in France and Belgium according to a process patented by Petin, Gaudet, Jackson & Co., in Rive-de-Gier (Southern France). This process consists of a series of operations succeeding each other at short intervals, whereby the tire is produced perfectly ready for use. A bar of iron or steel is first rolled out to the required thickness; it is then passed into what they call an *enroleur*, or coiler, which forms the bar into a coil resembling a coiled spring, or a corkscrew having its threads compressed. This coil is welded under a very heavy hammer, which at the same time forms it from the rough. The piece is now passed into the first rolling-mill, whereby its shape is improved, and a second rolling-mill completes the operation by perfecting the shape and smoothing the surface of the tire. All this is done with so much accuracy and rapidity that in the factory at Rive-de-Gier from one hundred pieces hardly one is spoiled, although 60,000 kilogrammes (1,320 cwt.) of iron and steel are formed daily into tire. These require no turning and have no visible welding joint, the tire being manufactured from a ring, the diameter of which is increased as it passes through the rolling-mills, whereby the required form is given to it at the same time.

Until lately only one such factory has been in existence in Europe, but at present one of the largest iron manufactories in Belgium, the company of Ougrie, at Seraign, near Liege, have introduced this process in their works, and large numbers of such tire are now manufactured and used all over Europe.

RAILROAD SLEEPING-CARS.

It is not more than two years ago that our attention was first directed to the subject of constructing railroad cars in such a manner that the seats might be easily and rapidly transformed into lounges for lodgers, thus rendering night-traveling upon railroads as comfortable as steamboat-traveling—an effect which had not previously been accomplished. Immediately after first hearing that a sleeping-car had been put upon some road out West, we announced the fact in the SCIENTIFIC AMERICAN, and suggested that this was a good field for the exercise of the genius of inventors. And so it has proved; for we have not only secured a great number of patents on such inventions for our clients, but the many plans of night-cars and car-seats which have been illustrated in our columns also testify that the inventors have not let their ingenuity in this direction slumber. The result is, that now we can scarcely take up an exchange paper but what has something to say about sleeping-cars; and, although it is often only a mere mention of the fact that they have been introduced on some road in the neighborhood of the place whence the newspaper issues, yet such brief statements prove, as conclusively as if volumes were written on the subject, that such inventions are wanted and that good devices are now coming into extensive use. Any useful invention which well supplies a great public want will always meet with liberal patronage, and the railroad sleeping-car is the most useful and comfortable invention for the benefit of the traveling community that has been latterly introduced.

"ONE MAN'S MEAT ANOTHER MAN'S POISON."

On this subject an able writer in *Blackwood's Magazine* says that, in 1844, a French soldier was forced to quit the service because he could not overcome his violent repugnance and disgust towards animal food. Dr. Prout knew a person on whom mutton acted as a poison. He could not eat mutton in any form. The peculiarity was supposed to be owing to caprice, but the mutton was repeatedly disguised, and given to him unknown, but uniformly with the same result of producing violent vomiting and diarrhœa. And from the severity of the effects, which were, in fact, those of a virulent poison, there can be little doubt that if the use of mutton had been persisted in, it would soon have destroyed the life of the individual. Dr. Pereira who quotes this passage, adds, "I know a gentleman who has repeatedly had an attack of indigestion after the use of roast mutton." Some persons it is known cannot take coffee without vomiting; others are thrown into a general inflammation if they eat cherries or gooseberries. Hahn relates of himself that seven or eight strawberries would produce convulsions in him. Tissot says he could never swallow sugar without vomiting. Many persons are unable to eat eggs; and cakes or puddings, having eggs in their composition, produce serious disturbances in such persons, if they are induced to eat them under false assurances.

PREPARING WOOL FOR MARKET.

Sheep are generally taken to some stream and washed, by squeezing the wool between the hands, until the water flows off clear; then the animals are allowed to run in the fields until they become dry, after which they are ready for shearing.

If the weather is cool, or if the sheep are kept too long in the water they are liable to take cold and die, and many farmers lose several sheep annually from this cause. Sheep should never be washed but on a warm sunny day, and the operation should be conducted as rapidly as possible. Owing to the liability of sheep taking cold, some farmers shear their fleece without washing, this saves considerable trouble, and the grease and dirt render the fleece much heavier than if washed; but purchasers give just so much less per pound for it.

It is recommended by those who have given much attention to the preparation of wool for market that all wool should be washed before it is shorn, but in our opinion it would be far better for wool-growers, if there was an understood arrangement between manufacturers and dealers in wool, in regard to the purchase of unwashed fleeces, so as to relieve the farmer from washing the animals, as the wool can be and generally is washed afterwards, before it is carded in the factories.

By wetting the wool of sheep by pouring water over them, then allowing them to stand in the warm sunlight until the oil and dirt become softened, they can be washed afterwards in one half of the time usually occupied in this operation.

THE DOOM OF THE WORLD.—The *North British Review*, discoursing on the doom of the world, has the following remarks:—"What this change is we dare not even conjecture; but we see in the heavens themselves some traces of destructive elements and some indications of their annihilative power. The fragments of broken planets, the descent of meteoric stones upon our globe, the whirling comets wielding their loose material at the solar surface, the volcanic eruptions in our own satellite, the appearance of new stars, and the disappearance of others, are all foreshadows of that impending convulsion to which the world is doomed. Thus placed on a planet which is to be burnt up, and under heavens which are to pass away; thus residing, as it were, on the cemeteries and dwelling upon mausoleum of former worlds, let us learn the lessons of humility and wisdom, if we have not already been taught in the school of revelation."

RECEIPTS FOR TESTING EGGS.—There is no difficulty whatever in testing eggs; they are mostly examined by a candle. Another way to tell good eggs is to put them in a pail of water, and if they are good they will lay on their sides, always; if bad, they will stand on their small end, the large end always uppermost, unless they have been shaken considerably, when they will stand either end up. Therefore, a bad egg can be told by the way it rests in water—always end up, never on its side. Any egg that lies flat is good to eat, and can be depended upon. An ordinary mode is to take them into a room moderately dark, and hold them between the eye and a candle or lamp. If the egg be good—that is, if the albumen is still unaffected—a light will shine through a reddish glow; while, if affected, it will be opaque or dark. —*Springfield Republican.*

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LAGER BEER.

Whether Lager is intoxicating or not, was a question which, a short time ago, exercised the minds of judicial functionaries and caused many an anxious alderman to scratch his head and experience the novel sensation of using his brain; but as they have left the question distinctly unsettled; one party crying "aye!" and the other as loudly vociferating "no!" we shall not attempt to discuss it, but only write of that which is certain and fixed—in short, stick to facts.

Fact No. 1 then is, that in these United States of America, a fluid of a delicious dark amber-color is imbibed in immense quantities during the summer months.

Fact No. 2, is that the said fluid has a peculiar and pleasant flavor and much refresheth the inner man of the imbiber.

Fact No. 3 is, that it is known by the name of "lager" or laid beer.

And for fact No. 4, it may be stated that scarcely more than one in a thousand of those who daily enjoy this Tuetonic beverage (which some say is *too-tonic*) have any idea of the method of its manufacture or the manner in which it is produced, and on this point we intend to enlighten the nine hundred and ninety-nine.

There are only three articles required to make lager: malt hops and water. The first is made from barley, which should be of the best quality, and to make it into malt is to convert its starch into grape sugar, which is about five times less sweet than common cane sugar. To do this the barley is steeped in water for from forty-eight to seventy-four hours, and then placed in heaps upon a flagged floor and allowed to germinate for about ten days. It is then slowly dried, first by currents of air, and then by a suitable stove; and this part of the process requires much care; as, if it is dried too highly or too slowly the malt will be injured. After the barley is cleaned and has remained sometime, it is ground in a mill and becomes pure malt.

The next process is termed "mashing;" the malt is mixed with hot water of a certain temperature, which differs in various breweries, each one having their "secret," as they call it, for producing the particular flavor which especially recommends that of certain manufactures to the palates of one or other class of connoisseurs; and after all the saccharine matter is extracted, it is drained off by a fine sieve and the liquid is called "wort." The wort is then heated several times, the heat being increase at each time and mixed with the hop-wort in the hop-kettle. The manufacture of this hop-wort must be very carefully conducted or all the bitter will not be extracted, and the liquid is, when boiled sufficiently, drawn off into large shallow pans called coolers, where care must again be taken that it does not absorb too much oxygen or it will afterwards turn sour; therefore, pure dry air and rapid cooling are important. From the coolers it is drawn off into the fermenting rooms, where it is put in immense vessels and yeast added. In one brewery in this city, they can ferment 4000 barrels or 120,000 gallons at one time. The beer remains here ten or fourteen days when it is removed to the cellars to "ripen," where, as in the fermenting room, the air should be constantly changed by mechanical means or a perfect system of ventilation adopted; the impure warm air being constantly withdrawn, and pure, cool air supplied. Lager beer can only be made from about the first of October till the middle of April, and summer beer is kept for six months and winter beer for two after it is manufactured, before being introduced to the market.

A quarter keg of seven and a half-gallons costs about a dollar and a half, and it should be drank as quickly after tapping as possible, as it soon begins to be flat and stale; indeed, in Munich, Bavaria, which is the greatest beer-drinking city in the world, when a barrel gets half empty the regular saloon frequenters spend the time in talking until another cask is opened and drink it while fresh. Families should bottle the beer immediately after the cask is opened or should order it in bottles.

That there is alcohol in lager every one knows, but the smallness of the quantity in proportion to the nutritive matter and bitter principle or tonic renders it so ineffective on the brain as to deserve the position, which much to our credit it has assumed, of a national beverage, to the exclusion of whiskey and other evil spirits.

Dr. Chilton of this city made an analysis of the lager brewed at the Lion brewery, in this city, and he finds—

Alcohol	3.82	parts.
Saccharine matter	1.13	"
Starch, gluten, bitter extractive and aromatic principle of the hop with other vegetable extract	5.93	"
Acetic acid	0.41	"
Carbonic acid (gas)	4.12	"
Water	84.59	"
Total	100.00	

Of the numerous adulterations we have nothing to say, as we are only writing of the pure article, and the unscientific must depend upon the honesty and business-character or reputation of the manufacturer more than on any other source.

We find in a Bavarian periodical a scientific *resumé* of the effect of hops on beer, which may prove interesting in this place, and we have no fear of anything becoming uninteresting while writing about lager.

Hops contain a volatile oil, a resinous matter, a bitter principle and tannic acid. If the beer while being made is boiled too long, the volatile oil is driven off, and recourse has been had to distilling the volatile oil from the hops and adding it separately, but it imparted a disagreable flavor and prevented clearing. The resinous matter is not easily soluble in fresh beer and even the dissolved portion is often thrown off during fermentation.

The bitter substance of the hops was formerly considered the most essential compound, but this view is now exploded. This bitter substance is found to be a strong narcotic and by drinking beers which contain large quantities of hops, headaches, dizziness, and a dryness of the the mucus membrane are quickly produced.

If a greater quantity of malt than ordinary is used, the beer contains more alcohol, but this is more healthy than a predominance of the bitter. Physicians should always prohibit bitter beer from all who suffer from hemorrhoids or incline to dropsy. More than from two to three pounds of hops should not be used to one thousand pounds of beer.

The tannic acid of the hops unites with the resinous matter; and when the beer cools, both separate, thus facilitating the clearing.

The brewer should carefully examine the hops, because if they have been exposed to dampness and are aged, the tannic acid changes into gallic acid, which gives to the beer a disgusting sour taste, and it does not combine with the resinous matter and separates from the beer, but gives it a dark red color.

And now as we have written of beer until we are thirsty, we shall desist for fear of inducing a corresponding dryness in the thorax of the reader.

SALES OF UNPATENTED INVENTIONS--NEWSPAPER POSTAGE.

MESSRS. EDITORS:—Enclosed please find one dollar, for which send the first volume of your "new series" to * * *. This is the best I can do for you at present. Several have promised to take the SCIENTIFIC AMERICAN; but when it comes to sealing up the dollars, they resemble the Irishman's flea—when wanted, they are *not there*. I have long been a subscriber to your valuable journal; and even if you had increased the price as well as the size, I should still have subscribed for it. I am glad, however, that you are able to afford it so low, for I am a poor man. Since I began to take it, I have procured you three other subscribers, and am sorry I have not been able to do better; but send me a prospectus, for "it is never too late to do good." Please answer the following questions: If A invents a machine and puts it in operation, and B asks A to sell him the right to construct such machines, can the inventor legally sell that right to B, and receive pay from him, without possessing any patent upon his invention? If illegal, what is the penalty? Also, please let me know what will be the postage on each number of your "new series," when paid in advance. Postmasters sometimes obtain more than their due from newspaper-subscribers, by charging heavier rates than the law requires.

Summit, Miss., July, 1859. J. J.

[We publish the foregoing letter in order that our answer may interest and instruct others as well as the party seeking the information. In the first place, we thank our friend for what he has done to extend the circulation of the SCIENTIFIC AMERICAN, and although its amount, in comparision with the achievements of others, is only as "the widow's mite," yet it shows the good feeling of our correspondent. In reply to his first question, we state that A *can* sell a right to construct duplicates of a machine upon which he contemplates to obtain a patent, but which is not yet legally secured. It would scarcely be considered honorable in A, however, to impose upon B, by selling him a right, if he (A) did not intend to patent his invention; although we are not aware that he would offend against the United States law, although perhaps, he might become amenable to certain State laws for fraud. As to the postage on the SCIENTIFIC AMERICAN, when paid in advance, it is *six and-a-half cents per quarter* (three months), for any distance within the United States, outside of the county of New York; to subscribers within this county our journal is delivered free. Our Mississippi friend is not the only person who has recently complained to us against postmasters overcharging postage on the SCIENTIFIC AMERICAN. We hope our patrons will no longer submit to such extortions; and for the benefit of all our readers and such postmasters as do not possess a copy of the "Laws and Regulations of the Post-office Department," we publish the following extract from that work:—

RATES OF POSTAGE ON NEWSPAPERS AND PERIODICALS, WHEN PAID QUARTERLY IN ADVANCE.

	Daily.	Tri-weekly.	Semi-weekly.	Weekly.
	Cents.	*Cents.*	*Cents.*	*Cents.*
Weekly newspapers (one copy only) sent by the publishers to actual subscribers within the county where printed and published	..	..	..	Free.
Newspapers and periodicals, not exceeding 1½ ounce in weight, when circulated in the State where published	22¾	9¾	6½	3¼
Newspapers and periodicals of the weight of 3 ounces and under, sent to any part of the United States	45½	19½	13	6½
Over 3 and not over 4 ounces	91	39	26	13
Over 4 and not over 5 ounces	136½	58½	39	19½
Over 5 and not over 6 ounces	182	78	52	26
Over 6 and not over 7 ounces	227½	97½	65	32½
Over 7 and not over 8 ounces	273	117	78	39

AMERICAN JOURNALISM.—We believe, says the *New York Tribune*, there are now printed within the limits of the Union not less than four thousand newspapers, at least five hundred of them daily, and five hundred semi-weekly. Their average circulation we estimate at two thousand each for the dailies, twenty-five hundred for the semi-weeklies, and fifteen hundred for the weeklies, making a total circulation in this country of more than four hundred millions of newspaper sheets per annum. Yet in 1813—less than half a century ago—the total circulation of newspapers in this country was estimated by Isaiah Thomas, in his "History of Printing," at only a little more than twenty millions of sheets per annum. At that time there were 359 newspapers, of which 27 only were daily. What an advance in less than half a century!

THE VALUE OF POSTAGE STAMPS.—Few of our readers, we imagine, can be aware of the immense correspondence which is carried on by the editors and publishers of this journal. They receive, on an average, at least one hundred letters per day; and they are confident of the fact that hundreds of them are carefully answered which would quickly find their way into the waste basket of almost every other newspaper-office in this city, and receive no other attention. Our postage tax is a heavy one, amounting to from $3 to $5 every day, and we would request our correspondents to be more cautious in future and enclose a stamp to pay return postage. It would relieve us very considerably. Please take this hint, kind reader.

EGYPTIAN PROGRESS.—The census of the population of Egypt, taken by order of the Viceroy, on the French method, has just been completed and gives the following result: The population, which in 1798 was 2,500,000, amounted in 1817 to 3,700,000, in 1847 to 4,250,000, and is now 5,125,000. The inhabitants of Alexandria, which in 1798 only amounted in number to $30,000, had increased in 1817 to 230,000, and are now near 400,000.

DRILLING HOLES IN GLASS.—We are informed by Mr. D. Mackenzie, of Canada West, that a composition of camphene and turpentine is the best which he has ever used for drilling holes in glass with a file drill. The drill is kept constantly wet with the solution, which appears to give it more "bite" than turpentine alone, which is commonly used for the purpose.

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OUR VISIT TO THE COLLINSVILLE AX WORKS.

If the mountains of New England are barren in fields of waving grain, they are prolific with active brains and busy hands. Necessity, the mother of invention, has contributed to stimulate the sons of the mountains in subduing stubborn nature and making the very waters which leap from their rugged rocks minister to their wants. Every stream which pours down through their romantic valleys has been harnessed to the revolving wheel, and with the song of the crystal waters dancing over every cascade, the music of the hammer, the saw, the spindle and loom join in cheerful chorus. A most remarkable feature of this portion of our country is the chain of manufacturing villages which, like gems, are strung from the outlet to the apex of every valley. Last week, we visited one of these busy hives, situated on the Farmington river, about fifteen miles from "Old Hartford," Connecticut, and we were well repaid for our journey to the "land of steady habits." Some persons believe that this State is only distinguished for producing very questionable wooden ware, but a visit to Collinsville will at once dispel all such *wooden nutmeg notions* from the minds of such individuals. This is the place where the famous "Collins' Axes" are made, and with which, our sturdy backwoodsmen have felled hundreds of square miles of forest, and opened up the breast of mother earth to the cheerful rays of the sun, enabling her to bring forth "seed for the sower and bread for the eater." As we consider the ax a mighty civilizer in the hands of our people—it being an instrument of *all* work to them—our visit to these Works was one of no ordinary interest, especially as we had often swung the ax in our frontier forests, in years gone by, and because we found a far greater variety of tools manufactured in this place than we had expected to witness.

About thirty-three years ago, the present village of Collinsville was composed of about half a dozen straggling houses, and a grist-mill, with a splendid water-power. It was then purchased by the Collins Company, whose business had previously been carried on at Hartford, the stamp of which is still retained on their axes. In 1826 new building were erected and the tool business inaugerated, and from that period, the village has borne the name of the company. The amount of business then transacted was very limited, but the tools manufactured soon acquired a high reputation, and the demand for them has gone on with a steady increase until Collinsville has attained to a population of twelve hundred inhabitants, all connected more or less with the company, under whose employ there are about three hundred and fifty mechanics and other operatives. A large capital is invested in the operations, twelve hundred tons of the best wrought iron, three hundred tuns of fine cast steel, and two thousand tuns of coal are annually worked up in conducting the manufactures. Over two thousand tools are finished daily, and these are of such a variety, that Mr. Collins, in passing over the list, hit them all off at one sweep by stating "we make almost every kind of tool which has a handle to it." We saw chopping axes; broad-axes, hatchets, adzes, picks, sledge-hammers, hoes, cane-knives, Spanish-matchets, and a whole host of other tools passing through the different processes, from the rough-bars of iron and steel, until they were polished like glass, finished and packed ready for transporting to the sales office in New York.

On this occasion Mr. Osgood, the gentlemanly superintendent accompanied us and explained all the operations. The main building in which the axes are manufactured is a large stone structure, fifty-five feet deep, by one hundred and thirty in length, and three stories high; and to this, an addition of about one hundred feet is about to be added—thus indicating continued progress in the business. On the ground-floor are sixteen very curious and ingenious machines, for forging axes and hatchets, eight of which are generally devoted to the former operation. These were invented by Mr. Root, a most skillful and ingenious mechanic, now superintendant of Colt's fire-arm manufactory, at Hartford. One of these machines somewhat resembles a semi-rotative octagon box, "rough and ready" for work, and capable of performing wonders in its way. It cuts off a blank for an ax from a bar of iron, punches out its eye, forges it on the face, end and sides, into the proper shape, and completes it ready for being trimmed, to receive its steel edge, and all this in a few minutes. Adjacent to each machine is, a furnace, in which the bar of wrought-iron is heated, and from thence it is taken and laid on a proper bearing at one side; the attendant places his foot in a stirrup and makes the machine clutch with its driver, when it makes a semi-rotation, a punch comes down and cuts off the heated skelp designed for an ax. This is now set on edge, when another touch of the operative's foot brings the machine into action again, a punch descends from above and another from below, approaching and pushing through the solid metal, as easily as if it were a piece of cheese. Their motion, however, is arrested before they meet, and the hole which they have made forms the eye of the ax with a small piece of metal left in the center. An iron handle made for the purpose is now inserted in this eye, and the machine comes right down upon it, forcing out the small piece of iron left in the hole, thus forming an eye as superior to that of the common welded axes as can well be imagined. On the machine itself and anvil on which it strikes, are several dies of the exact size and form for the ax to be made, and by a very few blows, and two heats, it is forged into the required shape. Each machine is under the perfect control of the attendant, and by a touch of his foot he makes it execute every motion—one man being capable of turning out three hundred and fifty axes per day. After the axes are thus forged in one of these machines, they are heated in a small furnace, their edges then trimmed and cut to the proper curve, ready to be split for receiving their tips of fine cast steel, which operation is executed in another building by blacksmiths. The cast steel for the edges is first cut into pieces of the required size for each tool, and then forged under the trip-hammer into the exact form. Each ax is now raised to the welding heat in a convenient furnace, its edge is split open with a wedge and sledge, and the steel tip at a white heat inserted in the split, after which a perfect weld is received under the trip-hammer. After the steel edges are thus welded on, each ax is hammered off and formed as accurately as possibly can be done under the hammer, when it is fit for the planing or shaving operation. This is executed by an ingenious power shaving-knife, which is under the perfect control of the attendant and is especially adapted for reducing rolling surfaces—not tools with flat sides. There are twenty-six of these shaving machines in the second story of the stone building, and any one of these iron barbers can shave down a rough ax to a pretty smooth face, in less time than the smartest disciple of Monsieur Tonson can scrape the countenance of a city gent. These machines are also the product of Mr. Root's busy brain, and are peculiar to this establishment. Prior to their application the axes were all ground, by which tedious, unhealthy, and disagreeable operation, the surplus metal was all washed away with the grit, but the shavings are now all saved and sold for scrap-iron. For some kinds of work, we think one of these machines would be found very useful in every machine-shop in our country.

After planing the axes, the next process through which they pass, in another apartment, is that of hardening. For this purpose, they are placed in a suitable furnace, in which there is a rotating iron wheel to receive them; and here they are heated uniformly, and raised to the proper degree of temperature required. Convenient to each furnace, for this purpose, there is a large bath, containing salt brine, to which a continuous fresh supply is furnished, and in it there is a circular revolving rack, with catches placed around it close to the surface of the pickle. The heated axes are now taken out of the furnace, and set, one by one, on the catches, with their edges left trailing in the hardening liquid. The next process which they pass through is that of tempering. This consists in placing them in an oven (on a rotating wheel, also), the temperature of which is regulated by a thermometer, and here they are kept for several hours, or until the metal is *toned* to that degree of elasticity and hardness which experience has decided to be the best for all practical purposes. These peculiar manipulations, which are exclusive to this establishment, ensure uniformly accurate results.

The next operation which they undergo is that of polishing on emery-wheels, after which their backs are dipped in a solution of asphaltum varnish; then they are hung on revolving frames, in a warm room, until they are perfectly dry, when they are neatly wrapped in a paper and packed for market. A most rigid system of inspecting every tool is pursued after every operation, and each mechanic places his peculiar mark on the article which passes through his hands; so that every defect found can be traced to its cause, whether it be in the metal itself or was effected by the operatives. From the great care exercised to ensure perfect workmanship, no wonder the tools of this company have acquired a very high reputation.

We have thus succinctly described the several processes and operations pursued in fabricating the "Collins axes." We believe this will be of great interest to most of our readers: for where is there a family throughout the length and breadth of the land in which there is not either an ax or a hatchet? We had intended to describe the different apartments in which the separate operations are executed; but we found that this rather tended to confuse the narration.

The Collins Company was the first which manufactured axes ground and polished, ready for use. Previously, most of the axes used were made by common blacksmiths, who used blistered steel for their tips, and who pursued no uniform system. The purchase of an ax in those days was like drawing in the lottery; the temper might be good, but it was just as likely to be either too hard or too soft—there was no uniformity in the quality of the axes sold.

We will now be brief with the description of other tools manufactured by this company, as it would require a volume to describe all the operations. There are several tools, however—such as hatchets—which are made in a similar manner, nearly, to the axes described. Sledge-hammers are made entirely of cast-steel, and great numbers are here fabricated for the miners of California, as well as those of other regions. Picks, in great quantities, for miners and railroad excavators, are also produced, in astonishing quantities. Coopers' tools, scorers for turpentine trees, and a countless variety of Spanish tools and instruments, are also manufactured. We were particularly struck with the great number of Spanish matchets produced. These are long knives—something after the "Roman sword" order. They vary in length, from twelve inches to that of a sailors' cutlass; some are sharp-pointed, some are blunt, some are curved, some straight, some narrow, some broad. In short, they are of all sorts and sizes. With their matchets, the Mexicans and other inhabitants of the same regions clear their paths through the tangled brushwood of forests, kill their cattle, cut down their corn, and sometimes flay one another, when they have nothing else to do. They are forged out of cast-steel, with a tang on each to secure the handle, which is formed of rings of horn or thick leather, placed over the tang, then submitted to severe pressure, by which they are squeezed so closely together that when they are afterwards ground and polished they have the appearance of being solid.

The picks, hoes, matchets, and most of the tools, after being forged, are ground down on stones, and afterwards hardened and tempered with the same care as the axes described. Quite a number of large buildings are required for all the different departments, and each particular article has its own allotted processes to pass through. We counted eighteen trip-hammers and as many forge-fires in operation in one shop, and a great number of grindstones, varying in size from two feet up to six in diameter. Every article, whatever is its name and character, undergoes the rigid inspection system by skillful mechanics, so that none may pass that has a flaw in it, and that the defects, if any, of every operation may be detected. A very fine finish is put on all the articles, and the emery and polishing-wheels employed are made on the premises.

As the water-power is abundant, and under the perfect control of the company, it is applied, for convenience, on no less than seven large breast-wheels and five turbines, scattered among the different buildings. Everything that can be done by water-power is carried out here in an ingenious manner. The water blows the bellows, turns the grindstones, swings the tilt-hammer, punches, bores—in short, does everything to save manual labor. The number of water-wheels will afford some idea of the extent of the premises and the power required to operate the machinery.

Collinsville is the terminus of the "Canal Railroad" (so-called from being partly laid in the bed of an old canal), which connects by a line of 38 miles with New Haven. The track passes through the village, dividing the shops, and the raw material is brought to the very doors by the iron-horse from New York, and the manufactured articles are as conveniently sent away to the

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mart where sales are effected. It is a village of brawny Vulcans, the clink of whose hammers resound from morn till night among the surrounding hills. Its position is somewhat romantic. High hills ascend on the right and left; white cottages peep out from among green bowers on the elevations, and the Farmington river winds through the valley, sometimes sleeping in the sunlight, and again dashing in foam over crag and jutting cliff. A very strong bridge stretches across the waters, and unites both sides of the river by a good roadway. Although confined by mountains, Collinsville cannot be prevented from expanding east, west, north and south; and as the business is a staple in its character—a useful and permanent one—of course, Collins' axes and Collins' hoes will always be required while forests have to be cleared and corn grows.

PHENOMENON OF THE FROZEN WELLS.

It is not only by her gold diggings that Vermont is just now attracting special attention from the outside world. The frozen well at Brandon is a great natural curiosity. It is situated on a gentle slope of ground, which rising on one side falls off on the other so moderately it may be called tolerably level. The soil is of a hard, compact, gravelly nature. The region round about furnishes marble (carbonate of lime) in abundance. Early in November last, Mr. Alexander Twombley commenced digging a well, and after going down about twenty-five feet without noticing anything unusual in the character of the soil, he came upon frozen ground (the surface earth at the time was frozen but a few inches). Continuing downward through this frozen earth for fifteen feet, he came to water. The soil, just at this point, he describes as yellowish and sticky. The water commenced freezing over soon after it was exposed. The well was stoned up three feet in diameter at the bottom, diminishing two feet at the top. The depth of water is five or six feet, the surface of it forty-one feet from the top of the ground. During the past winter the water froze over it so that it had to be cut by a person going down into the well every day, and some days the descent had to be made several times. The ice in the morning would often be three inches thick. In addition, the sides of the well, for a distance of fifteen feet above the water, would be encased with ice. The water ceased freezing over about the 15th of May last. The condition of the well on the 15th instant, when we visited it, was this: The water in the well is enclosed in a wall of ice six to eight inches thick, inside the stone wall, but not rising above the surface of the water, and affording a good foothold to a person once down there. For six or eight feet above the surface of the water the stone wall is encrusted with a layer of frost and ice, not thick. The water is clear, cold, and tastes well; it is not very "hard." The above facts proven, how shall the phenomenon be explained? The causes lie evidently in some peculiarity of the soil in that locality. Suppose we take into consideration several well-known facts. Chloride of calcium, with snow or ice, forms a powerful frigorific mixture. This chloride is formed by a union of carbonate of lime (marble) with muriatic acid, which is made from common salt. Chloride of calcium exists in solution in ocean waters, and also in certain spring waters, commonly in union with salt and chloride of magnesium. As before stated, the region about the well abounds in marble, or carbonate of lime, and quite likely this water may be from one of the springs saturated with chloride of calcium which snow or ice will form one still more powerful; why may not the chloride, supposing it to be present, with salt, perhaps suffice to freeze water, naturally cold by reason of its depth from the surface? If it is claimed that frigorific mixtures do not solidify, may not the above ideas point the way in which to look for a probable solution of the mystery?—*Springfield Republican.*

[If the conclusions of our cotemporary are correct, the fact can be demonstrated to perfection by an analysis of the water. But without taking the trouble to do so, it is our opinion that the chloride of calcium in the soil is not the cause of this ice phenomenon in the frozen wells of Vermont, because, if this were the case, the waters could not be used on account of their intensely bitter taste. The chloride of calcium has a very great affinity for water and is very soluble; now, as our cotemporary makes the statement that the waters of this well are not bitter (they taste well) and not very "hard," they surely cannot contain much, if any, chloride of calcium—not enough, we think, to produce this freezing phenomenon. It has been reported that Dr. Jackson, of Boston, has visited this well, and will make a report of his examination at the next meeting of the American Association for the Advancement of Science.—EDS.]

WILCOXSON'S STEERING APPARATUS.—We have to state, in addition to what we published last week, that the above apparatus is made with one screw as well as two for smaller ships, and the captains of some lake schooners, who have them in use, say they are the best steering apparatus they have tried.

TUNGSTEN STEEL.

We have noticed a paragraph in the columns of several of our cotemporaries to the effect that the German metallurgists have discovered that the metal "tungsten" mixed with steel, in the proportion of eighty of the latter and twenty of the former, forms a very valuable alloy, *harder* even than steel itself. They also state, that in consequence of this discovery, old tin mines that have been worked out will be again brought into use for the sake of their tungsten ores, that were heretofore considered valueless.

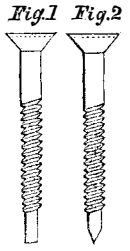
It is not stated who the metallurgists are that have made this discovery, but we suspect it is not of so much importance as is stated. When it is said that tungsten makes an alloy harder than steel itself, the expression is too indefinite, because steel can be made quite soft, and from that point made to every degree of hardness, up to engraving on glass, like the diamond itself. To make steel harder than can now be done is scarcely a desideratum, and unless tungsten imparts to it some other qualities, it will never be much employed as an alloy.

The ores of tungsten are very scarce in our country. In combination with iron it is called *wolfram*, and is found in Monroe, Conn., and one or two other localities. No use of this metal has hitherto been made in the arts.

A BRAD-AWL SCREW.

Alexander Pilbeam, of London, is the inventor of the screw which the accompanying illustration represents, Figs. 1 and 2 are side-views of the screw, the ends of which terminate like a brad-awl; in use it merely requires to be stuck with the hammer to drive the brad-awl fast into the wood, and then the screw-driver, applied and it will be found to enter the wood as quickly, if not quicker than the ordinary screw (which requires a hole to be made for it first) and is much more secure. As the fibers are broken away by the brad-awl part, they arrange themselves between the threads of the screw; and it will also be seen that, by being able to use the screw direct, one half of the labor is saved. They can be made of all sizes, and applied to hooks, studs, and rings, and anywhere that a screw is necessary.

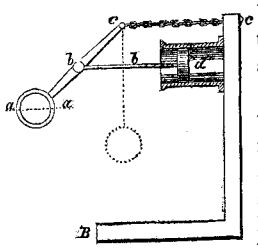
Fig.1 *Fig.2*



PHOTOGRAPHIC PORTRAITS AS SIGNS.

The following interesting decision was lately given in England:—A Mr. Mills was charged with wilfully destroying two portraits and the glass of the case in which they were exhibited on the street; damage, two guineas. One of the portraits was that of defendant's wife. The defendant expressed his annoyance at his wife's portrait being exposed to public view; and added that he had protested against it, and requested it might be withdrawn. His request was not noticed, and he certainly did destroy it, as stated. Mr. Broughton, magistrate, gave judgment. Whether an artist, an ale-house keeper, and any other people, all being alike to the law, might, after notice, seek to attract customers by hanging up a portrait of his neighbor's wife as a sign, was at least very questionable; but even if the exhibition was a nuisance, which the law would abate, it was clearly unlawful for the defendant to redress his grievance by violence. He must, therefore, pay for the the damage done; but, inasmuch as the exhibitor was entitled to no sympathy, the amount must be limited by a rigid estimate.

PROBLEM IN DYNAMICS.—A correspondent takes the accompanying figure from the London *Engineer*, and puts this interrogation to us:—Suppose the piston, *d*, to be pressed by a force of two tuns, and the lever raised to an angle of 45° from its perpendicular, what will be the weight of *a a* to balance the force in the cylinder, and also the forces on the horizontal lines *a a*, *b b* and *c c*; B being the base? *Answer:* Weight, two tuns; force on line *a a*, one tun; force on rod *b b*, two tuns; force on line *c c*, one tun.



THE Fourteenth Annual Fair and Cattle Show of the Chenango County Agricultural Society will be held at Norwich, N. Y., September 20th, 21st, and 22d.

AN INTERESTING ESTABLISHMENT.

During a recent visit to the great metropolis, we had occasion to admire the elegant fire-proof building whence issues the New York *Daily Times*. Adjoining this superb edifice is an immense brown-stone structure, one of the finest in the city, which forms a sort of religious, scientific, literary, and political center; as from it issues weekly the *New York Observer*, the *Century*, and that well-known and deservedly-popular journal, the SCIENTIFIC AMERICAN. It also contains the editorial-office of that excellent Democratic journal, the *Daily News*.

We were very much interested in visiting the offices of the SCIENTIFIC AMERICAN, which are the finest of the kind in the world. Here we found Messrs. Munn & Co., with a large corps of scientific persons around them, preparing matter for their journal, and executing drawings and specifications for new inventions previous to taking out Letters Patent. We had no previous idea of the extent of their business in this line. They have the finest collection of mechanical models outside of the Patent Office. It is altogether a curious and interesting place, and is well worthy of a visit from every one. These gentlemen have recently issued a very neat pamphlet of advice to inventors, which they circulate free.

[We clip the above item about ourselves from the Hartford (Conn.) *Daily Post*. We have to thank our friend Scofield for discovering us while on his visit here; we enjoy such notices very much.—EDS.

SLEEP OF PLANTS.

Plants sleep as well as animals; the attitude that some of these assume on the approach of night is extremely interesting to those who delight to study the beautiful phenomena of vegetable life. Some plants exhibit signs of sleep more marked than others. The leaves of clover, lucerne, and other plants close as the sun approaches the horizon; and in the honey locust this characteristic is particularly striking and beautiful. The delicately formed leaves close in pairs at nightfall, and remain so until the rising of the sun in the morning, when they gradually expand to their fullest extent. It is in common garden chickweed (*stellaria medica*) that the most perfect exemplification of the conjugal love and parental care of plants is observed. At the approach of night the leaves of this delicate plant, which are in pairs, begin to close towards each other, and when the sleeping attitude is completed these folded leaves embrace in their upper surfaces the rudiments of the young shoots; and the uppermost pair (but one) at the end of the stalk are furnished with longer leaved stalks than the others, so that they can close upon the terminating pair and protect the end of the shoot.

STOCKS OF RIFLES.—A patent has been taken out in England, by G. P. Evelyn, for an improvement in gun-stocks, called "the under-arm gun-stock," which we think deserves the attention of our gunsmiths, as it is an application of art in a direction which has been overlooked in a great measure. The new gun-stock is capable of being modified to suit various descriptions of fire-arms, and its object is the attainment of the following results: First, it is adjustable, so that persons of various hights, length of arm and neck, are enabled to use the same weapon with equal facility; second, it is arranged so as to avoid lowering the head in taking aim, and thus it ensures greater accuracy. Our gunsmiths seem to have no fixed principles to guide them in the construction of gun-stocks. This is an inviting field for improvement.

LONDON TRICKS OF NATURAL SCIENCE.—It is stated in one of our London cotemporaries that a number of persons in that city earn their livelihood by painting common birds to represent some rare and foreign sort, or who invent non-existing breeds. The more outlandish a bird is made to look, the more chance there is of selling it. A vulgar rat was once transformed into an elegant microscopic dog for a lady's pet; for a few weeks the little quadruped enjoyed the care and caresses of the admiring mistress, till the growth of its claws enabled it to take a promenade by means of the curtains to the ceiling.

RISING IN THE WORLD.—As an evidence of what industry and perseverance will do, it may be stated that the Hon. Solon Borland and Hon. Jere Clemens have risen, by successive stages, from United States senators and ministers plenipotentiary until they have reached the editorial chair; and they are now associated in the management of the *Memphis* (Tenn.) *Enquirer*.

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BILL'S METALLIC PISTON-PACKING.

This invention is intended to be applied to pistons that are packed with metallic rings, and it is designed to expand the rings equally all around, by means of two levers which are placed on the central hub of the piston, and that operate on a ring that is placed into the packing rings, and which is cut open on one side, so that levers pressing on the opposite side of this cut expand the ring equally; and, by the action of this ring, the packing rings are expanded equally, too. The levers are operated by a cam, to which a ratchet-wheel is attached, so that the ring may be gradually expanded without opening the piston. Fig. 1 is a horizontal section of the invention, and Fig. 2 is a vertical one.

Fig. 1

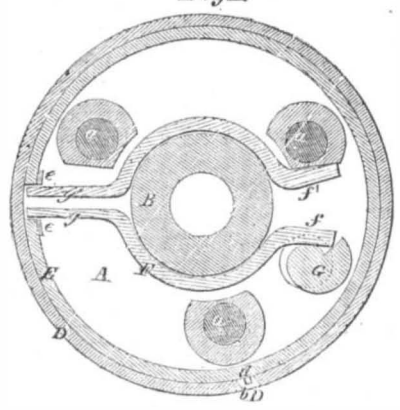
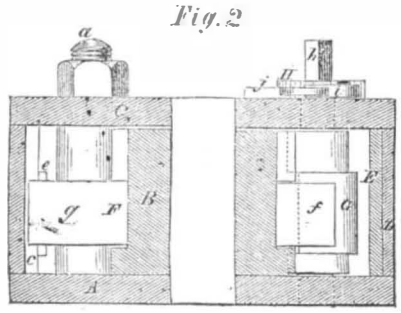


Fig. 2



A is the head of a piston to which the hub, B, is attached, and the follower, C, is secured on it by means of screws, *a*, in the usual manner. The packing consists of two metallic rings, D, which are cut open on one side, as seen at *b* (Fig. 1), so that they allow of an expansion, these cuts being made oblique and placed on opposite sides of the piston, as is usually done in order to prevent the escape of the steam and an unequal wear of the cylinder. A ring, E, is placed into the other rings, D, which is of the same width as the two former put together, and which fits closely into them, and a gap, C, is made into this ring in a vertical direction, and two pins, *d*, are fastened in its outer surface, which extend through the cuts, *b*, in the rings, D. Two levers, F, are placed over the central hub, B, which serves for their fulcrum, and these levers have two arms each, which extend on opposite sides from the hub. The arm, *f'*, of the lever presses against the socket of one the screws, *a*, with which the follower is attached, and its other arm, *g'*, extends to the gap, *c*, in the ring, E. The arm, *g*, of the lever extends also into this gap, so that these two arms, *g*, *g'*, press on the opposite edges, which are strengthened by plates, *e*, *e*, and the other arm, *f*, of the lever is operated on by means of a cam, G, the stem, *h*, of which extends up through the follower and terminates in a square part, so that it can easily be turned with a wrench or key fitted to it. A ratchet-wheel, H, is fastened on the stem, *h*, of the cam, and a pawl, *i*, which is pressed against the ratchet-wheel by a spring, *j*, allows of turning the same in one direction only, and it serves to arrest the cam in any position into which it may have been brought. The shape of this cam is such that, by turning the same, the arm, *g*, is pressed in more and more.

The operation is as follows:—The piston is placed into the cylinder before the rings are expanded, in which state it can easily be entered, and after it has been adjusted and properly fastened to the engine, the cam, G, is turned so as to act on the levers, *f*. By pressing in the arm, *g*, the arm, *f*, is forced out so that it acts on the edge of the gap, *c*, in the ring, E: and as this ring is prevented from slipping by the arm, *f'*, of the levers which presses on the opposite edge of the gap, *c*, it is expanded by the action of the cam equally all round, and as it fits closely into the rings, D, these latter will be brought up tightly against the sides of the cylinder; and in case of any wear, the smallest turn of the cam, G, will bring up the rings again, and the piston may thus easily be kept tight, and as the expansion is equal all round, the cylinder will always wear round, and no new boring-out will be required.

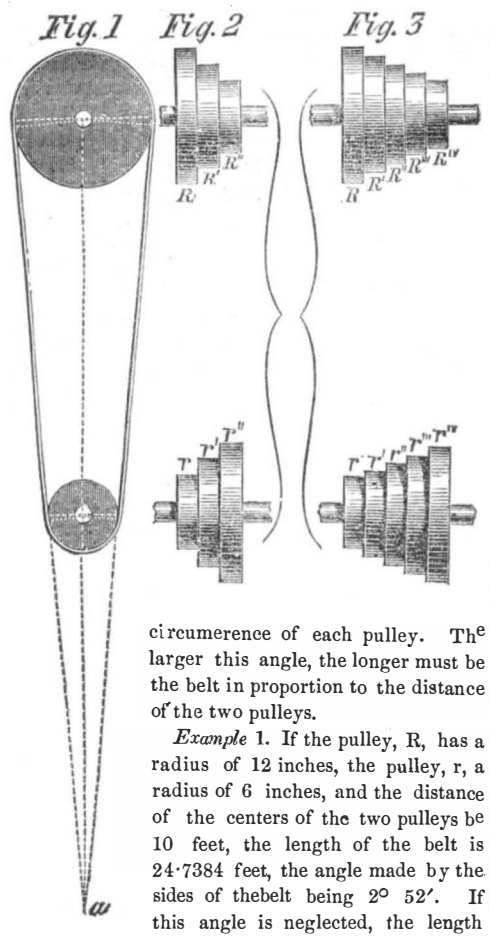
The inventor is Asa G. Bill, of Cuyahoga Falls, Ohio, and the patent is dated April 5, 1859. Any further information can be obtained by addressing the inventor, as above.

CONSTRUCTION OF CONE PULLIES.

The principal difficulty with cone pulleys is to construct them so that the belt is properly stretched when shifted from one speed to the other. The fault with most cone pulleys is, that the belt is perfectly tight on the quickest and slowest speed, and slack on the others; and the reason for this is that these pulleys are generally constructed independent of the distance from each other at which they are intended to work. If this distance is very great, compared with the diameter of the pulleys, it may be neglected; but at such distances where cone pulleys are generally used, a fault arises from this neglect, which causes all the difficulty. Suppose two pulleys—R and r, in Fig. 1—to be at a distance of 10 feet, the radius of the pulley, R, being 12 inches, and of the pulley, r, 6 inches; and it will be seen by referring to this figure, that the belt running over these pulleys embraces more than one-half of the larger and less than one-half of the smaller pulley. The difference between one-half of the circumference and between the arc encircled by the belt on both pulleys is measured by the angle obtained by prolonging the sides of the belt, until they intersect at a point, *a*, beyond the smaller pulley, r, and this angle has to be added to half the circumference of the larger pulley and substracted from that of the smaller pulley, in order to find the arc embraced by the belt.

If the two pulleys are at such a distance one from the other, that the angle made by the prolonged sides of the belt can be neglected, or if the two pulleys are of equal diameter, the length of the belt is found by adding to the double distance of the two pulleys one-half of the

Fig. 1 *Fig. 2* *Fig. 3*



circumference of each pulley. The larger this angle, the longer must be the belt in proportion to the distance of the two pulleys.

Example 1. If the pulley, R, has a radius of 12 inches, the pulley, r, a radius of 6 inches, and the distance of the centers of the two pulleys be 10 feet, the length of the belt is 24·7384 feet, the angle made by the sides of the belt being 2° 52′. If this angle is neglected, the length of the belt would be only 24·71 feet, making a difference of about one-third of an inch. If the pulleys are at 7 feet distance only, the length of the belt is 18·7479 the angle between the sides of the belt being 4° 5′ 46″. With neglecting this angle, the length of the belt is 18·71 feet, making a difference of nearly one-half an inch on a shorter belt.

Example 2. If it is now desired to construct two cone pullies with three speeds, R, R^1, R^3, and r, r^1, r^3, (Fig. 2) giving the first roller, R, a radius of 12 inches, and the corresponding roller, r, of the other cone a radius of 6 inches, the two following speeds, R^1 and r^1, to be of equal diameter, and the speeds R^3 and r^2 being the reverse of the first speed, it is found that, for a distance of 10 feet, the radius of the rollers R^1 and r^1 has to be 9·05 or 9 1-20 inches, or one-tenth of an inch more than is commonly given to these speeds under equal circumstances, in order to keep the belt stretched. If the pulleys are at a distance of 7 feet only, the radius of the speeds R^1 and r^1 is to be 9·0678 or 9 1-14 inches, or their diameter one-seventh of an inch larger than would be commonly given to them. One more example will be sufficient to show the difficulty, but also the practical value of these calculations.

Example 3. It is desired to construct two cone pullies with five speeds—R, R^1, R^2, R^3 and R^4 on one pulley, and r, r_1, r^2, r^3 and r^4 on the other pulley—R having 12 inches radius and r 6 inches; R^1 to be to r^1 as 3 to 2; R^2 to r_2 as 1 to 1; R^3 to r^3 as 2 to 3; and R^4 one-half of r^4. The distance of the centers of the shafts being 10 feet, the length of the belt is found to be 24·7384 feet, when stretched over the two first pulleys. In going to the second pair of pulleys, neither radius is known, and consequently the angle made by the belt and the true length of the belt cannot be found as easy as before. By the aid of higher mathematics, it is found, however, that R^1 must have a radius of 10·83 inches, and r^1 a radius of 7·22, to suit to the same length of belt which is used for the two former speeds. The angle made by the sides of the belt is 1° 43′ 10″, and if this angle is neglected the results become too large, 10·86 being found for the radius of R^1 and 7·24 for the radius of r^1, which would make the belt about one-eighth of an inch longer that it is required for the first pair, R and r. This fault would be larger yet if the pulleys were brought closer together. The radius of the pulleys R^2 and r^2, one being equal to the other, is found to be 9·05 or 9·1-20 inches, as shown in the second example. The radius of R^3 will be equal to r^1; that of r_3 equal to R^1; that of R^4 equal to r; and that of r^4 equal to R; thus making the several speeds of the two cone pulleys, at a distance of 10 feet, as follows:—

R.	R^1.	R^3.	R^3.	R^4.
12	10·83	9·05	7·22	6 inches.
r.	r^1.	r^2.	r^3.	r^4.
6	7·22	9·05	10·83	12 inches.

From the foregoing examples, it will be understood why two cone pulleys have to be made of different diameters for different distances, and it is impossible, therefore, to give a common rule that would enable those not skilled in mathematics to calculate the diameters of the different speeds of the cone pulleys placed at any distance which may be desired.

"STILL THEY COME!"

MESSRS. EDITORS:—Pardon me for saying that No. 1 of your New Series is one of the greatest improvements that has been ever made in any paper in this country; and now the SCIENTIFIC AMERICAN seems, in its various departments, to be perfect. I have taken it for eight years, part of the time by subscription and the rest of the time at the news agents, and I find it of increasing value each year. J. M. B.

Aurora, Ill., July, 1859.

[We are daily receiving complimentary letters like the above from all parts of the country. It gratifies us to know that our labors and the increased expense we are incurring in our New Series are being appreciated in all parts of our land. The public sentiment in approbation of our enlargement and change of form is universal, and our subscription list is now augmenting—thanks to our friends—at the rate of 200 per day!—EDS.

It is reported, in reference to the Hoosac Tunnel, Mass., that Messrs. Haupt & Company have concluded arrangements with a company of wealthy, energetic and experienced contractors, to sink a shaft on the west slope of the Hoosac mountain, two hundred and fifty feet in depth, and drive two thousand two hundred feet of the tunnel. By this means the work will proceed at four faces instead of two, and with an improved organization it is expected that a progress three times as rapid as heretofore will be accomplished. Visitors to the tunnel are now able to walk a quarter of a mile into the mountain at the east side.

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DARING FEATS OF ACROBATS & AERONAUTS.

Any feat in which human life is periled upon a desperate issue thrills us with emotion. Two such events have occurred in our country during the past fortnight. One was the daring exploit of M. Blondin, who, on the 30th ult., walked across the gorge of the Niagara-river on a single rope only two inches in diameter. The distance across is eleven hundred feet; the elevation above the boiling waters below one hundred and seventy. The acrobat walked along his cord in the presence of a dense concourse of people, and completed the feat in the short space of twenty minutes, and he did this with apparent ease and returned again without much fatigue. Many persons who came to see him, with the expectation that he would become dizzy and fall into the rushing torrent, were more than surprised at the apparent safety with which he traversed his aerial bridge, like a spider running along a thread of its web. We merely mention this performance as a wonderful exhibition of human intrepidity and balancing skill, as no useful result can ever be secured by it. The other feat to which we have alluded was the famous balloon voyage of Messrs. Wise, La Mountain, Gager, and Hyde, from St. Louis, Missouri, to Jefferson county, New York. In its nature it was very different from the acrobatic performance, because it was undertaken as an experiment of vast importance to test the practicability (not the possibility) of long aerial voyages. If safe balloon-traveling could be established, a complete revolution would be created for maintaining intercourse between distant places, but this result still appears to be far from us.

The veteran aeronaut, Mr. John Wise, has long entertained the idea that a successful balloon voyage across the Atlantic may be accomplished with a very large balloon. This question he has discussed with much plausibility in his work on the subject, published in 1850; and having discovered, in his former aerial excursions, a current of air flowing to the east at a certain altitude, he has been led to believe a long voyage to the east could be successfully accomplished. To test this idea, a person was found in Mr. Gager, of Vermont, who had the enterprise and ability to furnish the necessary funds for the undertaking; and for this purpose the monster balloon, *Atlantic*, was built by Mr. La Mountain, at Lansingburgh, N. Y., and carried to St. Louis in order to make the experimental voyage from that city to this (New York), prior to making a grand atmospheric journey across the ocean to Europe. We will now describe the results of this attempt:—

On the first instant the balloon was inflated with sixty thousand feet of coal gas, the expansive force of which was capable of raising more than fifteen hundred pounds into the atmosphere. It had a common basket-car secured to it and a very light and strong life-boat slung below. Considerable ballast of sand-bags was provided; a screw steering-apparatus for changing the direction of the balloon, several philosophical instruments necessary for the voyage, plenty of provisions, and a bag of papers, letters, and small parcels from an Express Company to their office in this city, composed the freight. At twenty minutes past seven, P.M., all things being ready, Mr. Wise ascended into the basket, and Messrs. La Mountain, Gager, and Hyde (the latter of the St. Louis *Republican*), took their places in the life-boat. The signal was then given for the stay-ropes to be cut, when the mighty mass shot up from St. Louis into the blue ether like a rocket, amid the plaudits of the multitude. Having ascended to an elevation where the thermometer fell to 42°, and the barometer to 23°, a strong eastward current was met and away they floated towards New York. At this time, Mr. Wise having been much exhausted with the preliminary duties, resolved to have a nap, and for this purpose he bade his companions below good night, rolled himself in his blanket, and was soon fast asleep. Near midnight he was awakened through a peculiar incident. Mr. La Mountain, who had charge of the midnight navigation, discovered they had ascended to a considerable elevation, and the gas being thus relieved from pressure, he hailed Mr. Wise to open the valve as the balloon had become very tense, and the gas was rushing from its neck with a loud noise. Having received no answer, he suspected Mr. Wise was smothered in the gas, and he solicited Mr. Gager to mount into the basket by a rope and see what was the matter. This was done and the veteran aeronaut was found breathing spasmodically, but a good shaking and the removal of the neck of the balloon from his face soon relieved him. Onward the balloon sped, after this, until daylight dawned, and at five o'clock next morning they were at the upper end of Lake Erie. After some consultation it was resolved to sail over the entire length of its waters, in order to test a notion entertained by some persons, that there is a peculiar affinity between balloons and water, which draws the former towards the latter, and prevents them from remaining suspended above it any length of time. For some time they moved along only 500 feet above the lake, then, when near Buffalo, they rose higher, crossed Grand Island, and proceeded towards Lake Ontario. It was here resolved to land a Rochester and let out Messrs. Hyde and Gager, after which, Messrs. Wise and La Mountain were to prosecute the voyage, hoping to reach Boston, knowing they were too far north now to reach New York. In order to carry ou this conclusion they gradually descended towards *terra firma*, where they met with a terrific gale of wind which frustrated all their plans and nearly cost them their lives. This hurricane struck the balloon with great violence, sweeping it downward towards the water and dashing it along at an awful velocity. All the ballast, and everything that could be cast away were thrown out to enable the balloon to rise, but all in vain. Messrs. Hyde and Gager ascended to the basket, but Mr. La Mountain kept his position in the boat, even while it sometimes dashed through the tops of the waves of the lake. Mr. Wise was hopeful that they would be saved, but to every appearance they were all doomed to lose their lives. At last the balloon rose about one hundred feet, but with more apparent danger still, for onward it swept towards the land, and went crushing through the tops of the trees, smashing them like pipe-stems, and continued thus for about one mile, until its progress was arrested by a tall oak; and, we are happy to state, although the boat, basket, and balloon were much injured, a kind providence preserved the lives of the daring aerial voyagers, who escaped with only a few bruises. Thus ended the longest balloon journey on record: it was commenced at St Louis on the evening of the first instant, at 7.20 P.M., and completed near Adams, in Jefferson county, N.Y., at 2.20 P.M., on the subsequent day. The distance traveled was 1150 miles; the time occupied, 19 hours; a speed compared with which, that of the locomotive is as that of a donkey to a deer. The highest point attained was a little over two miles, and it appeared to be a very pleasant voyage until the parties met with the gale, in which the balloon became perfectly unmanageable.

Although this aerial voyage is the longest on record, it does not appear to have added to our stock of knowledge in regard to making ballooning safe and practicable.

It is now seventy-seven years since the first balloon ascent was made with rarified air, by the brothers Montgolfier (inventors of the hydraulic ram) at Avignon, France, and since that period hundreds of aerial voyages have been undertaken by daring persons. The French balloonists appear to be the most fantastic in their efforts. They have the passion to do something different from all other people, hence, we had a Parisian who made an ascent, in this city, from the hippodrome a few years since with his head downwards; and, in Paris, another made several aerial excursions, two years ago, sitting astride of a pony.

There have been several American aeronauts, but three ascents were made by Frenchmen in our country before Mr. Durant, the first American, made the attempt. Mr. Wise has made more aerial trips than any other of our countrymen, and probably understands the difficulties to be overcome the best. It is now 24 years since his maiden flight came off from Philadelphia, on the 2nd of May, 1835. He is cool, daring, and well calculated for this risky life, and, taking all things into consideration, he has been exceedingly successful. He states that the *Atlantic* balloon will be yet rebuilt, and that a voyage across the Atlantic ocean may be expected. From his experience and character, we judge, that if there is an aeronaut living who can accomplish this feat, Mr. Wise is the man. If a balloon were to move across the ocean with the same speed with which the *Atlantic* sailed from St. Louis, it would only take two days to fly from New York to England; such a feat really does not appear to be an impossible thing, and we hope to live to see it done. In closing this article, we would state that we are endeavoring to procure an engraving of this celebrated balloon *Atlantic*, and we hope to have it ready for our next week's issue.

CRAWFISH AND RATS.

MESSRS. EDITORS:—In No. 31, Vol. XIV., SCIENTIFIC AMERICAN, it is stated that Dr. Cartwright read a paper before the New Orleans Academy of Sciences, in which he attributed the breaking of the levees in that city to the burrowing of crawfish. I differ from him in opinion; it is true that these fish burrow in the banks of rivers, creeks, and in mill-dams, and they are very injurious to the latter, but I have not the least doubt that water-rats are chiefly the cause of levees breaking. They burrow large holes, and riddle these embankments in such a manner that when a freshet comes down it passes through these openings as through the meshes of a seive, and they are gradually enlarged until wide spaces are left for the water to flow through, when, as a consequence, away goes a whole section of the levee. Gophers and moles also burrow down to the surface of low-water in rivers, and they may also assist to cause the breaking of levees. Crawfish bore very small holes in embankments, to let a little stream flow through, and in these little passages they fish for shrimps and other water fry, but a whole gross of their holes would not do so much damage as that of a single rat. A most determined crusade should be maintained in every city, and especially every shipping port for the purpose of destroying rat vermin. They are not only the most ugly but the most destructive creatures that run on four legs. They burrow in the ground under the walls of our houses, and they chew their way through planks and joists to get into our kitchens. And they are so ravenous and cunning withal, that they almost defy the whole genius of benevolent rat-trap inventors to catch them, and all the bounty of the kitchen to satisfy their stomachs.

Rewards used to be offered in the days gone past (when wisdom ruled the counsels of our fathers) for the heads of depredating wolves and panthers, and such was the success which attended the measure that these wild brutes were completely exterminated from the neighborhood of civilized men. The same policy should now be pursued in every city for the extermination of rats. If a reward of only five cents per head were offered for every rat slain in New York, an immense saving would be annually effected for the city. Such a reward offered would at once summon scores of the tricky urchins who prowl about the docks, to engage in an honest occupation —rat hunting—whereby thousands of the vermin would be slain annually for the benefit of the community in general and dock storekeepers in particular.

J. C. K.

LEE & LARNED'S SELF-PROPELLING STEAM FIRE-ENGINE.—An engine built (on the principle illustrated and described on page 89, Volume XIV., SCIENTIFIC AMERICAN) for the Southwark Hose Company, of Philadelphia, was run on the high road from Bristol to that city on the common road. It went by railroad from this city to Bristol, stopping at Trenton, N. J., on its way, and there gave an exhibition of its hydraulic powers. The whole weight of the engine, water and nine passengers was 12,000 pounds, 9,000 being the weight of the engine alone. The first three miles were made in 16 minutes running time, and it went over the covered bridge at Neshaming Creek, 350 feet long, with a draw of 40 feet in the center, and up a very heavy grade, making the 1,000 feet in exactly one minute. The time occupied in traveling the 20 miles was two hours, grades and all included. We think that this journey shows that there is an engine suitable for common roads, and perhaps a more extended application than fire-engine purposes may be found for Messrs. Lee & Larned's build of steam-carriages.

ARTESIAN WELL.—The artesian well at Charleston, S. C., is tubed to the depth of 1320 feet, and supplies 100,000 gallons every twenty-four hours. Its temperature when it reaches the surface is about 83 degrees of Fahrenheit, its taste slightly alkaline, and it is thought to have medicinal qualities. Glass deposited in it for a few hours receives an iridescent coating similar to that at the artesian well of Grenelle, near Paris. A trough near the well, on one of the great thoroughfares of the city, is supplied with this water for the use of horses, which manifest a singular avidity for it, many of them refusing to drink at their stables in the morning in the expectation of receiving their supply at the trough on their way to their stands.

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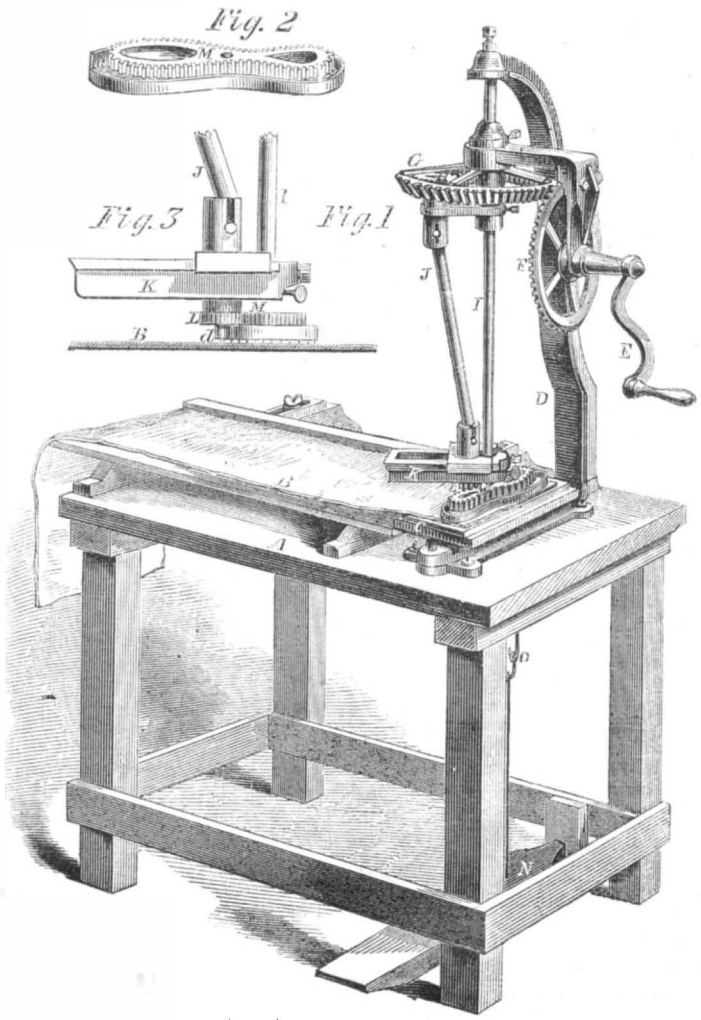
CRAWSHAW'S SOLE-CUTTER.

The cutting of a boot or shoe-sole should not be left to the chance of accident from hand cutting, and as it is the part of boot which is most exposed to wear, it should be cut as neatly as possible round the edge to prevent the necessity of much after trimming, which has a tendency to separate the fibers of the leather. Again, where so many boots and shoes are made as in our large factories, speed is a great desideratum ; and a simple enconomical device which will produce soles with great rapidity, is the subject of the present engraving. It is seen in perspective in fig. 1, a table, A, contains a false frame, C, which can be elevated by the treadle N, and links, O ; and the leather, B, that is to be cut into soles (being first reduced to strips exactly as wide as the sole is long) is placed on the table or the frame, A, and on the platform or table, C.

A standard, D, rises from the frame, and carries a vertical bevel wheel, F, that is rotated by a crank handle E. This bevel wheel gears into a horizontal one, G, that has upright cogs on its inside, and is placed on the central vertical shaft, I, the lower end of which carries the knife guide, K, seen in Fig. 3 Immediately under the wheel, G, on the shaft, is a projection having a bearing in its end, that carries a cogwheel, H, which gears in the teeth on the inside of G, and which is connected to the cutter *d*, by an inclined rod, J ; the rod being allowed sufficient play in its bearings, a former, or pattern, M, provided with a series of pegs or projections at regular distances apart and near its edge, is placed on the leather ; and it is connected to I by a screw and joint, so that I is free to move in it and yet support the pattern, M, whose outside edge must be exactly the the shape of the sole desired to be cut. Fig. 2 is a detached view of M, it has a toothed elevation on it, into which the wheel I, on the knife shaft, gears ; and by its motion it accommodates the knife to the shape of the pattern ; a raised edge, *a*, around the pattern keeps the knife close to it. This pattern is adjustable and can be turned to cut each sole toes and heels alternately, and can be placed in any position to avoid a bad split in the leather.

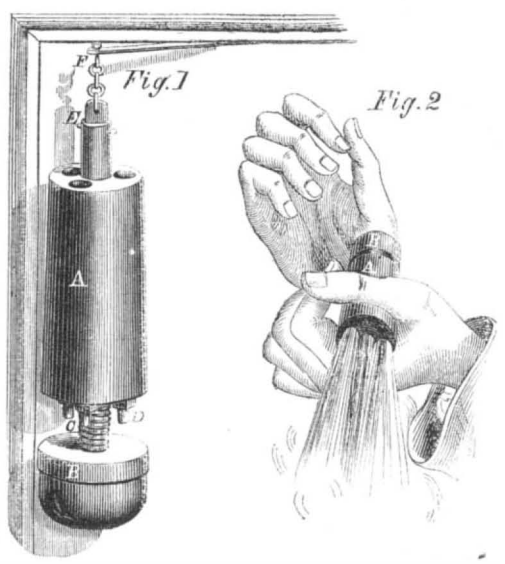
The operation is very simple ; the leather is pulled on to the platform or table C, and the foot being pressed on the treadle, the table is elevated and the leather pressed against the under surface of the pattern, when the projections enter a little way into the leather and hold it just under the pattern to be be cut. These marks on the leather left by the projections are not a deterioration but a positive advantage, as they form well defined and regular marks for the insertion of the pegs. The handle F is now moved round and the knife which has been pressed in the leather or the elevator of C, passes quickly round the outside of the pattern cutting out the sole with great rapidity. The foot is then relieved from the treadle N, and C, falls down to the level of the table on A, and the sole being removed, the leather is again advanced on to C, and another sole cut in the same manner. This useful and truly excellent machine is the invention of John Crawshaw, of Rochester, N. Y., and was patented July, 20, 1858, any further information may be obtained of Crawshaw, & co, Rochester N. Y., or the agent, Alanson Brown, New York.



IMPROVED SOLE-CUTTER.

CLARK'S BURGLAR'S ALARM.

To awake with your throat cut, as somebody somewhere says, is anything but a pleasing sensation, especially when the mutilation is accompanied by the loss of money, valuables and clothes ; yet every newspaper contains some account of housebreaking or hotel-robbing or murdering for plunder. In this country, where the immense size of the hotels prevents the chambers and passages being properly guarded, it behoves every traveler to be provided with some means of speedily and securely fastening his chamber-door and of being awakened at the first attempt that may be made to force it open, in order that he may defend himself from thieves and murderers. To this end, J. G. Clark, of Augusta, Ga., has invented the "burglar's alarm" shown in our illustration. It is an admirable little device. Fig. 1 shows its application to a door, by a flat serrated strip of metal, F, which is placed between the top of the door and the frame ; the alarm, of course, being placed within the room. A, is a cylinder of metal having three barrels or powder chambers bored in it, the lower end of each barrel having a breech, and a nipple D, being placed in it, so that when a cap is placed on D, and the barrels are loaded, the device forms a perfect three-barreled pistol. A hole runs through the center of the cylinder A, by which it slides on the central rod P, that is suspended from the strip F, and at its lower end there is a piece of metal B, of the same diameter or a little larger than A. When suspended as shown, the cylinder A is kept from contact with B, by a small spring C, around the rod E. If the door is now attempted to be forced open, the strip F will, of course, be loosened, and the whole device will drop to the ground ; the end of the piece B being first stopped by the floor, the momentum of A will be enough to cause it to strike B forcibly on the top of the caps, and discharge the three pistols ; thus frightening the burglar and awakening the slumberer.

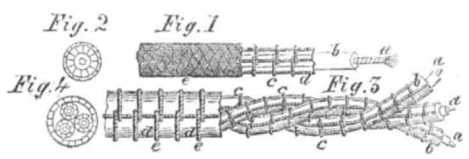


The above, however, is not the only use to which this ingenious device may be applied, as will be seen by reference to Fig. 2, which shows it in use as a common pistol ; the barrel A being held in one hand, care being taken to have the end of A project beyond the hand, and B being struck with the other, the caps can be exploded and the powder and balls discharged. It may be used with percussion-caps alone, without powder, and it can be carried in the waistcoat pocket. This device is so simple and convenient that no traveler should be without one. It was patented June 7, 1859, and any further information may be obtained by addressing Mr. Clark, who has an office at No. 14 Wall-street (room 23), in this city.

IMPROVED SUBMARINE CABLE.

This cable, the invention of Joseph Rogers of London, is shown in our engraving, where Fig. 1 is a view of one strand, and Fig. 2 an end view of the same ; *a* is a strand of small copper wire ; *b*, is a coating of gutta-percha, which it is preferred to apply at two or more separate operations, or, should it be preferred to omit the coating of gutta-percha, in place of it, a coating of other insulating material, such for example as india-rubber, may be applied. *c*, are plaited bands laid longitudinally, each composed or five or other convenient number of strands or fibrous material, by preference, hemp ; these bands are secured by the twine *d*, bound round it either spirally or by preference in the manner shown ; *e*, *e*, are yarns of hemp or other fiber plaited over the longitudinal bands, and applied by an ordinary plaiting or braiding machine. In the specimen shown, eight separate bundles of yarns are employed (four passing round the cable in each direction), and each bundle is made up of about a dozen small yarns, but this may be greatly varied. In some cases, in places of securing the longitudinal bands by binding with twine as above described, the longitudinal bands are applied as plaiting proceeds, and the plaiting then serves to secure the bands.

Before applying the fibrous bands and yarns to the covered wire or strand, they are saturated with a composition formed by mixing 8 parts of rosin, 1 part tallow, 8 parts of linseed oil or boiled oil (preferring boiled oil), and 2 parts patent driers ; these materials are boiled and stirred together until thoughly mixed. The bands and yarns are passed through the composition while it is kept boiling in a cauldron. The invention also



consists in producing a submarine electric telegraph cable, containing more than one conductor, by surrounding separately each of the conducting wires or strands, whether covered with gutta-percha or not, with the longitudinal plaited bands, saturated and secured as in the cable shown at Figs. 1 and 2, but without the external plait of yarns, and afterwards laying together the conducting wires or strands thus protected, and again surrounding them with longitudinal plaited bands secured by twine, and saturated with the composition already described ; Fig. 3 is a side view, and Fig. 4 an end view or a cable so constructed. *a*, *a*, are the conducting strands ; *b*, *b*, the interior plated bands ; *c*, *c*, the twines which secure them ; *d*, *d*, the exterior plaited bands ; *e*, the twine which secures these bands ; the cable thus formed may be further protected by plaiting yarns over it, as before described.

PRICE LIST OF GAS COMPANIES IN THE UNITED STATES AND CANADA.—We print on another page a table from the first number of the *American Gas Light Journal* published by John B. Murray & Co., bankers of this city. We intend to keep our readers thoroughly posted on the formation of new companies, and the value of the various stocks. We shall publish a table about semi-annually, corrected to the date, so that our pages will form a complete index of gas operations commercially and scientifically for the whole continent.

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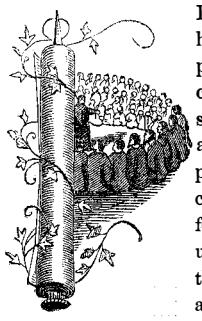
VOL. I., NO. 3.....[NEW SERIES.].....*Fifteenth Year.*

NEW YORK, SATURDAY, JULY 16, 1859.

THE FATHERS OF PHILOSOPHY.—III.



PROUDLY the conqueror plants his foot upon the vanquished land; proudly the mariner regards his craft when safely harbored after some rough and perilous voyage; and with a wholesome and honest pride do children in the streets recall their city's mighty dead. The feeling of success in the one leads us to admiration of the means in the other, and the climax is the applauding voice of posterity on the actor and the means at his command. If, as we do, we adore, with all the fullness of hero-worship that is within us, the memories of the great soldiers who have, from time to time, decorated their race or devastated countries, or the great poets who have sung sweetly to the entranced ear of genial man, how much more should we honor the remembrance of those who have lived lives of peace, inculcating honesty into men, and, by their example and teaching, improving humanity through all future ages! Should we not forever hold them in sweet memory's cells, and keep the recollection of them ever green? The voice of all mankind will respond "we should!" And it is with this idea and this respect that we proceed to enumerate the works and tell the story of the life of the founder of the Italic School.

PYTHAGORAS.

While the people of Athens were worshiping "THE UNKNOWN GOD" on Mars Hill, and the population of Ephesus cried "Great is Diana of the Ephesians!" and six centuries and a half before Saint Paul, with his logical reasoning, told the inhabitants of both cities about the true God and the way of salvation, there was born on the island of Samos, not far from the latter city, the man Pythagoras, who was in some measure to prepare the Grecian mind for the reception of Paul's logic and wisdom. At eighteen years of age, in the year 568 B. C., he had, like most youths, a desire to travel and study the philosophies and acquire the learning of foreign lands. His first point was Egypt, where, by the interest of the king, Amasia, and after submitting to certain rites, he was admitted into the colleges of the priests. He passed twenty-two years in this country and then visited other lands, but the route he took or the exact countries he visited is so wrapped up in contradictions that it must be left in doubt. On returning to his native island he attempted to open a school to teach geometry, but the Samians were either too stupid or too lazy to profit by his instructions, and he relinquished his design. He then visited Delos, and after presenting cakes to Apollo, he pretended to receive from the god a code of doctrines for the government of men, and with the same purpose he repaired to Crete, and was initiated into the most sacred mysteries of Greece. It was in Greece, at Phlius, that he first assumed the title of "philosopher," or lover of wisdom, in modest distinction to the title of "sophist," or wise man, which had been conferred upon him.

Returning to Samos, he went into a semi-circular building used by the Samians as a place of public resort, and delivered, with assumed authority, the doctrines of his sect, and in a secret cave instructed his more chosen followers, But as his discourses had too much in them of individual freedom, he had to leave the island, and he passed over to the city of Crotona, now Otranto, in Italy, on the gulf of Tarentum, and it was from this that his sect received the title of the Italic School. The inhabitants of Crotona were licentious and corrupt in the extreme, but he quickly changed them into a sober and frugal people; and it is said that six hundred persons were prevailed upon to submit to his severe discipline, which required that they should throw all their possessions into the common stock, and acquire a habit of silence, docility and gentleness. After this the fortitude and self-command of the candidate for admission to the knowledge of his more profound doctrines had to submit to a long course of severe abstinence and rigorous exercise; and to teach them humility he exposed them for three years to the jeers, contempt and contradiction of their fellows. No animal food was eaten by him, and he abstained from pulse and beans. Clothed in a flowing white robe, with a crown of gold upon his head, he preserved a majesty of demeanor and a commanding gravity, and by these means was looked up to as a superior being. This we may honestly believe was not charlatanry on the part of Pythagoras, but as he lived in a superstitious age, and had to talk to a superstitious people, he adopted these accessories to obtain a respectful hearing. He married Theano, of Crotona, and had two sons, Telaugas and Mnesarchus, who took charge of the school after his death, which happened in the Temple of the Muses, at Metapontium, B. C. 497, whither he had fled when persecuted for urging the people to the strenuous assertion of their rights, against the encroachments of their tyrannical governors.

Some precepts of his sect are good, such as:—"Above all things, govern your tongue." "Quit not your station without command of the general." "Remember that the paths of virtue and vice resemble the letter Y." Persius, speaking of this latter precept, said:

> "There has the Samian Y's instructive make,
> Pointed the road thy doubtful foot should take;
> There warned thy raw and yet unpracticed youth,
> To tread the rising right-hand path of truth."

We would not exceed our usual space, and so will defer our account of his musical and other discoveries until next week.

THE HAND.

The hands are *striking* objects of power and beauty. The ancient masters of painting—Michael Angelo, Raphael, Barry, and others—paid great attention to the painting of the hand, and always instilled into them a power of expression which harmonized with the features of the person represented. No one who has examined the works of these great men has failed to recognize this marvelous characteristic in their paintings; but modern artists generally concentrate all their genius upon the execution of the face and form, to the neglect of the *minutiæ* of the hands or arms; hence, many historic personages are painted with their own faces, but with the hands of other individuals quite unlike them in style or character. Great orators and actors have paid much attention to the effect which judicious movements of the hands always produce upon an audience, in the display of some passionate touch of feeling.

We have now in mind a clergyman whose beautiful hand and grace of gesture have given him an enviable reputation. He is the admiration of the ladies; and a female friend of ours once said to us that, if she had been born deaf, a visit to his church would always have been a rich intellectual treat to her; for he had such a handsome hand, and his gestures were so graceful and expressive, that they conveyed as much significance of thought to her as his language did to the rest of the audience.

The idea of beauty is not a mere whim of the mind, like the indulgence of a passion for dress, such as jewelry, laces, cashmere shawls, &c.; but it is based upon certain fixed principles, and does not change along with the ever-varying alterations in shapes and materials of wearing-apparel and ornaments that are constantly occurring in Paris, London and New York. As the effect of hands in pictures is rendered more or less pleasing to the eye in proportion to the degree of harmony existing between all the limbs and features of the figure, so the corporeal beauty of every living man or woman may be much increased by proper culture; the best cosmetics being cleanliness, air and exercise. In the finger-nails, for instance, when properly taken care of, there is much of beauty; but when neglected, they become, like weeds in a garden—a positive disfigurement, betraying an absence of taste and refinement. To keep them in proper order, the finger-nails should be cleaned daily and cut as often as once every two weeks; and these operations should be done with a sharp pen-knife, which makes a much smoother cut than a pair of scissors. A pretty hand may be much improved in appearance by careful attention to the nails, and even a hand which is not of the most graceful type may be rendered more endurable to the eye. If the hands and nails are not kept clean, and closely trimmed, their adornment with diamonds and emeralds will not render them beautiful to the eye of good taste.

PHOTOGRAPHY AND THE ARTS.

Another new application of photography has been brought to our attention, this week, in the *American Journal of Photography*, which contains the specification of a patent granted in England to G. Baxter, of London, for a new method of coloring photographic pictures. The coloring of lithographic and calico prints is executed with a separate block, roller or stone for each color, each block, &c., being so engraved that it only touches the parts of the pattern where the specific color is to be laid. The new application embraces this arrangement for putting the colors on pictures taken by photography. The engraved blocks for coloring such pictures are worked in a press.

In our last issue we stated, in reference to the character of the illustrations of bank-bills in "Hewet's Encyclopedia of American Bank-Note Currency," (published by Wm. Cousland & Co., this city) that the number then before us contained *fac-similes* of counterfeits upon 144 Massachusetts banks. We ought to have stated that it contained 144 illustrations of *genuine* bank-bills of banks in Boston; it being the publishers' intention to arrange the whole work in alphabetical order, commencing with Massachusetts, then giving the banks of the other New England States, and then those of the middle, western and southern States and Canada, in regular succession, each weekly number containing 144 specimens of good bills. We were led to make the erroneous statement above alluded to from a casual glance at the index of the first number, which enumerated, as we now find, only the counterfeits existing on certain genuine bills therein engraved. So far as the description given referred to photography applied to the detection of counterfeit bank-notes, the principle is the same—the specific object of the article was to point out a new application of the photographic art.

THE PICTORIAL WEBSTER'S DICTIONARY.—We have received the above work from the publishers, G. & C. Merriam, of Springfield, Mass., and it fully answers all our expectations. In looking through its pages, even cursorily, we soon discover the value of the pictorial additions; for thousands of obscure words, whose meaning can only be faintly explained by great circumlocution of definitions, stand clearly forth in their significance and use when the illustrations place their practical applications before the eyes of the reader. We did think that it would be of especial benefit to young folks, but we now think (to make an Hibernicism) that it will be of especial benefit to everybody. A valuable feature is the table giving the pronunciation of the names of distinguished persons, as there is nothing more awkward and grating to the ear as to hear the names of giants in science and literature wrongly pronounced. Nearly 10,000 new words have been added, and altogether it may justly claim the proud position of the king of dictionaries.

BLANCHARD'S STEAM-BOILER.—We learn from the *Eastern Argus*, of Portland, Maine, that a trial-trip has been made at that place with the steam-tug *Tiger*, fitted up with Mr. Blanchard's improvements (illustrated and described on page 412, Volume XIII., SCIENTIFIC AMERICAN), and the result was a saving of nearly one-half the fuel that would have been used had it been consumed in the ordinary manner.

NOT QUITE A HUMBUG.—The Vermont gold discoveries are not all humbug. A few men are regularly at work (according to the Springfield *Republican*, which has sent a special reporter there) and gold in small quantities is the result of their labors. One man with another to help him, got $2.75 in a day, and a person named Hankerson, a regular miner, had $5 or $6 in his troughs, as the result of a day's work.

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PRICE CURRENT OF THE GAS-LIGHT SHARES OF CITIES AND TOWNS, CORRECTED JUNE 30, 1859.

Organized	Town.	State.	Capital.	Dols. each Share.	Semi-an'l Divd.	Dividends payable.	Price per Cent.	Population of Gas District	Private Consumers.	Public Lamps.	Price 1000 feet.
1857	Adrian	Mich.	50,000	50	..	May & Nov.	84	3,500	230	20	3 50
1857	Akron	Ohio.	10,000	..	..		....	.....	120	22	3 00
1845	Albany	N. Y.	250,000	20	4	Jan. & July.	105	65,000	3,200	510	3 00
1858	Albion	N. Y.	30,000	100	..	Do.	90	.....	116	....	3 80
	Alleghany	Penn.	140,000	25	4	May & Nov.	104	.....	....	....	....
1853	Allentown	Penn.	40,000	100	3½	Do.	100	.....	300	30	3 50
1857	Alton	Ill.	75,000	..	..		....	.....	250	67	3 50
1858	Annapolis	Md.	24,000	25	..	Jan. & July	95	.....	109	70	4 00
1858	Ann Arbor	Mich.	23,000	50	5	Mar. & Sept.	95	.....	180	25	4 00
1855	Attleboro'	Mass.	50,000	100	3	June & Dec.	75	.....	151	....	4 00
1850	Auburn	N. Y.	60,000	50	5	Jan. & July	100	.....	400	120	7 00
1853	Augusta	Maine.	86,000	50	..	Do.	50	.....	235	....	4 00
1816	Baltimore	Md.	550,000	100	5	June & Dec.	135	.....	8,200	1,800	2 50
1852	Bangor	Maine.	120,000	100	4	Jan. & July	104	.....	764	30	3 50
1853	Bath	Maine.	68,000	100	..	Do.	....	.....	236	18	3 75
1858	Belfast	Maine.	13,000	100	..	Do.	....	.....	133	....	7 00
1856	Bellefont	Penn.	20,000	25	2	Do.	....	.....	105	18	4 00
1854	Bethlehem	Penn.	23,000	50	3½	June & Dec.	100	.....	207	29	3 80
1853	Binghamton	N. Y.	50,000	50	..	May & Nov.	....	10,000	230	53	4 00
1853	Bordentown	N. J.	50,000	50	2	June & Dec.	....	.....	114	16	3 80
1822	Boston	Mass.	1,000,000	500	5	Do.	140	.....	10,410	2,265	2 50
1851	Bridgeport	Conn.	75,000	25	4	Jan. & July	100	10,000	500	58	4 00
1857	Bridgeton	N. J.	22,000	20	..	May & Nov.	....	.....	169	13	4 00
1855	Bristol	R. I.	35,000	50	4	Jan. & July	70	.....	120	24	4 00
1825	Brooklyn	N. Y.	2,000,000	25	5	Do.	130	.....	10,000	2,600	3 00
1848	Buffalo	N. Y.	600,000	50	5	Do.	115	90,000	3,300	2,000	3 50
1853	Burlington	Vt.	75,600	25	..	Do.	....	.....	220	....	4 50
1852	Cambridge	Mass.	200,000	100	4	Feb. & Aug.	106	.....	1,294	257	3 50
1852	Camden	N. J.	100,000	100	3	April & Oct.	100	.....	700	140	3 50
1853	Canandaigua	N. Y.	50,000	50	..	Jan. & July	90	.....	100	21	4 00
1858	Catskill	N. Y.	10,000	..	..	Private	....	3,000	134	20	4 00
1846	Charleston	S. C.	723,800	25	4	Jan. & July	112	.....	....	....	4 00
1851	Charlestown	Mass.	150,000	50	4	Do.	120	25,000	1,150	210	3 50
1858	Charlotte	N. C.	14,000	50	6	Mar. & Sept.	110	3,500	120	50	7 00
1849	Chicago	Ill.	750,000	25	5	Jan. & July	105	.....	4,100	970	2 50
1841	Cincinnati	Ohio.	1,000,000	100	5	Do.	115	.....	6,000	1,700	2 50
1854	Cohoes	N. Y.	50,000	20	3½	Do.	....	.....	....	....	3 60
1853	Columbia	Penn.	37,500	25	..	Do.	70	.....	250	21	3 50
1853	Columbus	Ga.	54,175	25	5	Do.	95	8,000	246	77	6 00
1850	Columbus	Ohio.	100,000	10	5	Do.	120	30,000	800	174	3 00
1853	Concord	N. H.	45,000	50	4	Do.	112½	.....	400	38	3 50
1854	Cumberland	Md.	60,000	50	3	Do.	....	6,000	220	36	4 00
1857	Danbury	Conn.	15,000	25	4	Do.	100	.....	118	....	4 00
1848	Dayton	Ohio.	50,000	25	4	Feb. & Aug.	....	25,000	575	165	4 60
1853	Dedham	Mass.	40,000	50	..	Jan. & July	....	.....	112	....	4 00
1849	Detroit	Mich.	250,000	50	5	Do.	100	.....	1,417	491	3 50
1857	Dorchester	Mass.	110,000	100	..	Do.	50	.....	210	50	4 00
1853	East Boston	Mass.	133,000	25	4	Do.	102½	.....	476	270	3 50
1858	East Greenwich	R. I.	11,200	100	15	Do.	100	.....	100	....	7 00
1850	Easton	Penn.	125,000	50	4	June & Dec.	120	.....	657	76	3 60
1856	Eastport	Maine.	31,000	55	..	Do.	....	.....	135	15	4 00
1855	Elizabeth	N. J.	100,000	20	3½	Jan. & July	95	.....	230	40	3 80
1852	Elmira	N. Y.	50,000	25	3½	Do.	70	.....	....	....	4 00
1859	Fayetteville	N. C.	25,000	100	6	Do.	100	7,000	....	....	6 00
1857	Fishkill	N. Y.	12,000	25	..	Do.	....	1,000	50	....	6 00
1853	Fitchburg	Mass.	45,000	50	3	Do.	60	7,000	180	34	4 00
1855	Flushing	N. Y.	41,000	50	1¼	Mar. & Sept.	....	.....	134	18	4 00
1846	Frankfort	Ky.	30,000	..	..	City Works	....	.....	140	79	4 50
	Fredericksburg	Va.	75,000	50	3½	Jan. & July	40	.....	....	....	....
1851	Frederick City	Md.	36,000	100	..	Do.	....	.....	300	40	6 70
1858	Fredonia	N. Y.	10,000	50	..	Do.	....	.....	37	8	4 00
1855	Galena	Ill.	80,000	50	..	Do.	....	.....	236	60	4 00
1854	Geneva	N. Y.	75,000	25	3½	Do.	....	.....	....	34	4 00
1854	Glenn's Falls	N. Y.	35,000	50	3	Feb. & Aug.	80	.....	161	18	4 00
1854	Gloucester	Mass.	40,000	50	..	Jan. & July	....	.....	....	....	3 50
1854	Hagerstown	Md.	15,000	10	..	Do.	....	.....	125	....	7 50
1857	Harlem (N. Y. City)	N. Y.	300,000	50	3½	Do.	105	.....	700	1,800	3 50
1849	Hartford	Conn.	175,000	25	4	Do.	105	.....	....	....	3 50
1856	Hollidaysburg	Penn.	30,000	25	3	Do.	80	4,000	200	10	3 50
1854	Honesdale	Penn.	30,000	25	3	Do.	80	.....	180	35	4 60
1853	Hudson	N. Y.	50,000	100	3½	Feb. & Aug.	100	.....	260	64	4 00
1856	Huntsville	Ala.	30,000	25	25	June & Dec.	....	.....	600	100	5 00
1857	Iowa City	Iowa.	40,000	50	..	Feb. & Aug.	....	.....	....	....	....
	Ithica	N. Y.	72,000	25	3½	Jan. & July	67½	.....	....	....	....
1857	Jackson	Mich.	25,000	50	..	Do.	70	.....	125	20	3 50
1856	Jamaica	N. Y.	20,000	25	4	Do.	90	.....	130	20	4 00
1856	Janesville	Wis.	50,000	50	3	Do.	....	.....	....	....	....
1853	Jersey City & Hoboken	N. J.	300,000	20	4	Do.	120	.....	1,500	212	3 00
1856	Johnstown	Penn.	40,000	25	..	Do.	50	10,000	251	....	3 00
1848	Kalamazoo	Mich.	30,000	100	..	Do.	....	10,000	....	....	4 00
1844	Kensington	Penn.	100,000	10	5	Feb. & Aug.	110	.....	2,800	400	2 50
1855	Kingston	Penn.	50,000	50	..	Jan. & July	....	.....	240	30	4 00
1854	Lafayette	Ind.	60,000	50	3	Do.	....	.....	250	60	3 25
1849	Lancaster	Penn.	100,000	25	4	Do.	80	.....	610	100	3 00
	Lansingburg		.....	..	..	Private.	....	.....	....	....	....
1849	Lawrence	Mass.	120,000	100	5	Feb. & Aug.	....	.....	745	63	3 50
1853	Lexington	Ky.	60,000	50	4	Jan. & July	100	.....	300	104	4 00
1856	Lewiston	Penn.	19,800	20	..	April & Oct.	80	3,000	150	18	3 60
1838	Louisville	Ky.	481,400	50	6	Jan. & July	125	.....	2,839	938	2 70
1853	Lynchburg	Va.	70,000	25	5	Do.	104	.....	320	50	3 80
1852	Macon	Ga.	75,000	25	4	Do.	112	.....	254	105	5 00
1851	Madison	Ind.	60,000	25	3	Do.	70	10,000	303	95	3 50
1855	Madison	Wis.	100,000	25	..	Do.	....	.....	220	70	6 00
1854	Malden and Melrose	Mass.	50,600	100	3	Feb. & Aug.	100	180	....	25	4 00
1852	Manchester	N. H.	100,000	100	5	Jan. & July	110	25,000	800	125	3 00
1830	Manhattan (N.Y. City)	N. Y.	4,000,000	50	5	Do.	150	600,000	25,000	8,576	2 50
1857	Marietta	Ohio.	30,000	50	..	Jan. & July	....	.....	125	7	4 00
1855	Meadville	Penn.	35,000	25	..	Do.	....	.....	155	90	3 50
1852	Middletown	Conn.	50,000	25	3	Mar. & Sept.	....	.....	250	30	4 00
1852	Milwaukee	Wis.	400,000	50	5	Jan. & July	105	24,000	1,450	265	3 50
1855	Mount Holly	N. J.	16,650	50	3	April & Oct.	....	.....	140	....	7 00
1857	Muscatine	Iowa.	50,000	25	..	Jan. & July	....	.....	....	....	....
1845	Nantucket	Mass.	36,000	100	4	Feb. & Aug.	95	.....	270	65	4 00
1850	Nashville	Tenn.	140,000	50	6¼	Jan. & July	110	.....	700	200	4 00
1846	Newark	N. J.	300,000	50	4¾	Do.	110	.....	2,400	453	3 50
1852	New Brunswick	N. J.	100,000	20	4	Do.	115	.....	464	75	3 80
1857	Newcastle	Del.	22,300	10	3	Do.	95	1,200	112	19	4 00
1848	New Haven	Conn.	200,000	25	4	Do.	130	.....	2,064	201	4 00
1853	New London	Conn.	70,000	50	3	Do.	100	.....	300	12	4 00
1835	New Orleans	La.	1,500,000	100	6	Do.	134	.....	5,000	2,000	4 50
1853	Newport	R. I.	130,200	100	4	Do.	105	.....	500	96	3 50
1823	New York	N. Y.	1,000,000	50	5	May & Nov.	170	100,000	15,000	4,000	2 50
1853	Norristown	Penn.	41,700	25	3	Jan. & July	105	.....	350	850	3 75
	Northern Liberties	Penn.	400,000	25	7¼	June & Dec.	140	.....	....	....	2 50
1857	Norwalk	Conn.	25,670	25	4	Feb. & Aug.	105	.....	205	8	4 00
1855	Norwich	Conn.	75,000	25	4	Do.	100	.....	500	100	3 50
	Oswego	N. Y.	65,000	25	4	Do.	85	.....	....	....	....
1855	Ottawa	N. Y.	45,000	25	6¼	Do.	100	.....	222	71	4 00
1856	Owego	N. Y.	40,000	50	3½	Do.	....	.....	186	36	4 00
1857	Palmyra	N. Y.	12,000	50	..	Do.	....	.....	120	....	3 50
	Paterson	N. J.	110,000	5	3	Do.	95	.....	600	96	4 50
1850	Pawtucket	R. I.	65,000	50	4	Do.	106	.....	475	75	3 50
1855	Peckskill	N. Y.	31,000	25	3	June & Dec.	....	4,000	190	37	4 00
1855	Peoria	Ill.	90,000	50	..	Do.	....	.....	349	140	3 50
1852	Petersburg	Va.	120,000	25	5	Jan. & July	100	20,000	560	192	3 80
1841	Philadelphia	Penn.	3,000,000	..	..	City Works.	....	650,000	32,000	5,000	2 25
1855	Piqua	Ohio.	50,000	50	..	Jan. & July	95	.....	175	51	4 00
1836	Pittsburg	Penn.	300,000	50	5	Do.	140	.....	2,500	516	1 50
1854	Pittsfield	Mass.	40,000	100	..	Do.	60	.....	210	....	4 00
1853	Plymouth	Mass.	40,000	100	..	April & Oct.	....	.....	181	5	4 00
1849	Portland	Maine.	250,000	50	4	Jan. & July	110	30,000	1,900	242	3 50
1851	Portsmouth	N. H.	60,000	100	3	April & Oct.	90	.....	425	31	4 00
1855	Portsmouth	Ohio.	50,000	50	4	Jan. & July	100	.....	350	63	3 50
1855	Portsmouth	Va.	80,000	50	4	Do.	100	.....	236	58	4 00
1850	Pottsville	Penn.	104,500	50	2	Do.	50	.....	520	62	3 30
1850	Poughkeepsie	N. Y.	70,000	25	4	Mar. & Sept.	85	.....	625	60	4 00
1848	Providence	R. I.	525,000	50	4	Jan. & July	112½	.....	4,000	820	3 00
1854	Quincy	Ill.	89,650	50	4	June & Dec.	90	.....	398	217	3 50
1857	Rahway	N. J.	35,000	20	..	Jan. & July	100	.....	150	....	4 00
1858	Raleigh	N. C.	18,000	100	6	May & Nov.	100	5,000	108	34	6 00
1848	Reading	Penn.	80,000	25	3	Jan. & July	75	.....	700	46	3 00
1852	Richmond	Va.	341,975	..	..	City Works.	....	.....	....	....	....
1848	Rochester	N. Y.	200,000	50	5	Jan. & July	115	.....	2,000	436	3 00
1852	Rome	N. Y.	35,000	100	3½	Do.	....	.....	....	26	3 60
1854	Rondout & Kingston	N. Y.	65,000	20	3½	June & Dec.	100	.....	375	36	4 00
1854	Roxbury	Mass.	150,000	100	5	Jan. & July	110	.....	1,100	366	3 50
	Saco	Maine.	71,600	100	3½	April & Oct.	....	.....	220	18	4 00
1847	Saint Louis	Mo.	600,000	50	..	June & Dec.	....	.....	4,000	1,550	3 50
1857	Saint Paul	Minn.	200,000	50	3	Jan. & July	75	.....	159	154	6 00
1850	Salem	Mass.	125,000	100	4	Feb. & Aug.	110	.....	1,300	150	3 50
1859	Salisbury	N. C.	14,000	50	6	May & Nov.	100	3,500	70	50	6 00
1854	Sandusky	Ohio.	75,000	50	..	April & Oct.	....	.....	300	70	3 60
1853	Saratoga	N. Y.	75,000	100	..	Jan. & July	....	.....	250	26	3 60
1851	Schenectady	N. Y.	Private.	..	..	Private.	....	11,000	400	160	4 00
1856	Seneca Falls	N. Y.	80,000	50	2	Jan. & July	60	.....	220	37	4 00
1855	Stamford	Conn.	22,000	25	5	April & Oct.	110	.....	140	55	4 00
1859	Staunton	Va.	18,000	50	6	Jan. & July	100	4,000	70	....	7 00
1848	Syracuse	N. Y.	125,000	25	5	Mar. & Sept.	100	.....	1,200	260	3 30
1859	Tarrytown	N. Y.	70,000	50	..		....	.....	....	....	4 00
1853	Taunton	Mass.	60,000	50	3	Jan. & July	100	.....	245	44	4 00
1847	Trenton	N. J.	100,000	20	4	Do.	100	15,000	700	95	3 80
1848	Troy	N. Y.	200,000	100	4	June & Dec.	110	.....	1,575	312	3 60
1849	Utica	N. Y.	80,000	100	4	April & Oct.	100	.....	612	112	3 60
1854	Vicksburg	Miss.	66,000	50	..	Mar. & Sept.	....	.....	220	115	4 50
1848	Washington	D. C.	500,000	20	5	Jan. & July	120	.....	2,500	800	3 50
1851	Waterbury	Conn.	100,000	25	..	Do.	....	.....	200	36	....
1858	Waterford	N. Y.	12,000	..	..	Do.	....	.....	80	....	....
1854	Watertown	Mass.	100,000	100	2	Do.	....	.....	262	57	4 00
1852	Westchester	Penn.	50,000	25	2½	Feb. & Aug.	....	.....	543	64	3 50
1853	West Troy	N. Y.	100,000	50	3	Jan. & July	80	.....	425	....	4 00
1850	Wheeling	Va.	75,000	25	6	Do.	103	.....	700	129	2 70
1850	Williamsburg	N. Y.	337,500	50	..	Do.	75	.....	....	....	3 50
1857	Williamsport	Penn.	31,000	25	..	Do.	....	6,500	253	....	3 80
1833	Wilmington	N. C.	60,000	50	5	Do.	102½	.....	286	62	5 00
1852	Wilmington	Del.	130,000	50	5	Feb. & Aug.	132	.....	1,250	150	3 50
1854	Winchester	Va.	36,000	50	2½	Mar. & Sept.	75	.....	195	40	4 00
1856	Woodstock	Vt.	7,000	50	4	Jan. & July	70	.....	79	1	6 00
1853	Woonsocket	R. I.	82,000	100	5	Do.	75	.....	200	....	3 50
1849	Worcester	Mass.	120,000	100	5	Do.	90	.....	920	127	3 50
1854	Yonkers	N. Y.	70,000	50	..	Do.	....	.....	290	....	3 80
1849	York	Penn.	40,000	50	3	June & Dec.	90	.....	314	37	7 00
1858	Ypsilanti	Mich.	20,000	50	..	Feb. & Aug.	....	.....	140	20	4 00
1848	Zanesville	Ohio.	44,600	25	4	Do.	....	.....	318	73	3 50

CANADA GAS-LIGHT COMPANIES.

1848	Kingston	C. W.	20,000	100	5	Mar. & Sept.	105	12,000	400	106	3 50
1853	London	C. W.	100,000	20	5	May & Nov.	100	12,000	300	112	5 00
1847	Montreal	C. E.	300,000	40	4	Mar. & Sept.	108	80,000	2,000	500	3 25
	Quebec	C. E.	180,000	200	4	Do.	106	.....	1,217	365	3 00
1847	Toronto	C. W.	400,000	100	4	Feb. & Aug.	99	50,000	1,919	874	3 33

FOREIGN SUMMARY—METALS AND MARKETS.

A new file-machine has been introduced into Leeds, England, from France, which the *Mercury* of that city states, cuts superior files to those made by hand. This machine is under the perfect control of the workman, and gives a thousand blows per minute. Hitherto, machine-made files have been very inferior in the burr to those made by hand.

A submarine lamp has lately been experimented with at Marseilles, France, by M. Guidardet. The waters were very turbid, but a diver went down with this lamp to a depth of 16 feet and could see with it to write at a distance of seven feet from the light.

The quantity of flax raised in Great Britain and Ireland has greatly decreased during the past five years. The amount imported last year, was 90,794 tuns; an annual supply of 150,000 tuns is required. A new company with a large capital called the "National Flax Company" has been organized for the purpose of extending the cultivation of this plant and rendering Ireland independent of Russia and other countries for a supply.

At a late meeting of the Manchester Philosophical Society, H. M. Ormerod produced two specimens of iron used in buildings which have become oxydized as to injure the structures in which they had been used. An iron cramp taken from a buttress of the Manchester Parish Church had become treble its own thickness by rust and had thus split the building in the center, and lifted about twelve feet of the wall. It was inserted about ninety years ago. The other piece of iron was a small wedge taken from the steeple of St. Mary's Church; it was three-eighths of an inch thick originally but had increased to seven-eighths of an inch with the rust. There were several wedges used, and these had lifted the stones which they were meant to keep in their places, and some of them had even been split by the slow but certain force of rust expansion. The steeple was erected in 1756, and the upper part had become so ruinous by these wedges that it had to be taken down pursuant to a notice given by the city surveyor. The iron rust of these wedges was very hard and brilliant, and capable of being made into a magnet of considerable power. Here is an important subject for our architects. Of course the wedges were of wrought iron, which when used in buildings and exposed to the damp atmosphere should always be coated with boiled linseed oil.

PRICES OF FOREIGN METALS, JUNE 24.

	£	s.	d.		£	s.	d.
Staff. bar-iron, per tun	8	00	00	Swedish steel, in faggot	21	00	00
Common English	7	00	00	Copper in tile	107	10	00
Single sheet	9	10	00	British pig lead	22	15	00
Double sheet	11	00	00	Tin, block	129	00	00
Round nail rod	8	00	00	Bar	130	00	00
Square nail rod	9	00	00	Banca	134	00	00
Hoop iron	9	00	00	(Charcoal) plates	13	00	00
Welsh iron rails	5	15	00	Spelter	19	00	00
Staffordshire pig-iron	3	10	00	Zinc, in sheets	28	10	00
Scotch pig-iron	2	11	00	Copper sheathing, per lb	00	1	00
Swedish iron	13	00	00	Brass sheathing	00	00	10
Swedish steel	20	10	00				

The metal market is very dull, and prices nominally the same as last week. The Scotch pig iron—an important branch—is in a very depressed condition. Spelter is very dull: lead in pretty good request. There has been a reduction of no less than $4 per tun on common tin, but tin plates were somewhat firmer. There was little doing in rails.

For these commercial statistics we are indebted to the London *Engineer* and *Mechanics' Magazine*.

New York Markets.

COAL.—Newcastle gas, $7; Anthracite, from $4.50, $4.75, to $5.

COTTON.—The market has been quiet, with a fall of one-fourth of a cent from last week's prices. Good ordinary Upland, Florida and Mobile, 10¾c.; Texas, 10½c. Middling fair from $12⅝c. to 13⅛c.

COPPER.—Lake Superior ingots at 21c. per lb. for cash. Copper bolts, 30c. Sheathing, 26c.

FLOUR.—Genesee extra brands, $6.75 a $8.75; Ohio choice, $7.70 a $8; common brands from $5 up to $6.70.

HEMP.—American undressed, $140 a $150; dressed from $190 a $210. Jute, $95 a $90. Italian scarce. Russian clean, $210 a $215. Manilla 6⅝c. a 6¾c. per lb.

IRON.—American rails, $51,50, same as last week; Anthracite pig, $21, $22 and $23 per tun; Swedish bar, $85 a $86, and English refined, $52.50 a $54.50. Russian sheet, first quality, 10¾ a 11¼c. per lb.

LEAD.—Galena, $5.72½ per cwt.; German and English refined, $5.62½.

LEATHER.—Oak slaughter, light, 34c. a 36c. per lb.; Oak, heavy, 33c. a 35c.; Oak, crop, 40c. a 42c.; Hemlock, middle, 25c½. a 26½c.; Hemlock, light, 25c. a 25½c.; Hemlock, heavy, 23½c. a 24½c; Patent enameled, 16c. a 17c. per foot, light. Sheep, morocco finish, $7.50 a $8.50 per dozen. But a moderate business in oak and hem lock.

NAILS.—Cut are quiet but steady at 3½c. a 3¾c. per lb. American

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clinch sell n ots, as wanted, at 5c. a 6c.; wrought foreign, 3c. a 3½c.; American horseshoe, 15c. a 20c.

OILS.—Linseed oil, 61c. a 62c. per gallon; whale, bleached, 55c. a 57c. a 63.; sperm, crude, $1.3), $1.35, and $1.40; lard oil, 93c. a 94c.; refined rosin, 30c. a 40c.; coal, refined, $1.12 a $1.25; camphene, 44c. a 46c.

RESIN.—Common, $1.82½ per 310 lbs. bbl.; white, $6.75 a $4.50 per 280 lbs.

STEEL.—English cast, 14c. a 16c. per lb.; German, 7c. a 10c.; American spring, 5c. a 5½c.; American blister, 4½c. a 5½c.

TIN.—Banca, 31½c. per lb. Plates per box, $7.12 a $9, according to quality—a decline from last week.

ZINC.—Sheets, at 6¾c. a 7½c. per lb.

The foregoing rates indicate the state of the New York markets up to July 7.

It will be noticed that the price of Russian hemp is at least five dollars per tun higher than the best American, and it is generally preferred when it can be obtained. The exercise of more care in the raising and cleaning would bring our hemp up equal to any that comes from Northern Europe.

The steamer *Persia* took out from this port, on the 6th, inst. $753,750 in specie.

Considerable quantities of American leather are now exported to England, 200 sides were shipped to Liverpool last week; we used to import leather.

The receipts of the Illinois Central Railroad, for June, were $148,416; last year in the same month they were $154,192—a slight decrease.

The report circulated in our city that a loan of two millions, authorized by the State of Missouri, was offered in our market for two weeks without takers has been contradicted.

The entire expenses of the United States Government for the fiscal year ending June 30th, was $66,336,586. No less than $37,955,000 were applied to the army and navy department.

The following is an exhibit of the conditions of the New York Banks:—Loans $123,401,788; specie, $22,-941,665; circulation, $8,365,790; deposits $78,132,611.

NEW INVENTIONS.

MERCURIAL BAROMETERS.—In a mercurial barometer the pressure of the atmosphere is indicated by the difference between the levels of the mercury in the tube and in the cistern. When the scale is fixed as in barometers of ordinary construction, the indication is never absolutely correct, for the level varies to some extent in the cistern with every variation in the tube, and the hight of the mercury in the tube is indicated irrespectively of the cistern. Some contrivances have been hitherto invented for adjusting the scale to the level in the cistern, for the purpose of obtaining correct indications, but have not been as convenient as is desirable. G. Tagliabue, of this city, has invented an improved mode of applying a gage in combination with the scale and the cistern to provide for a more convenient adjustment, which consists in making the gage, which is attached permanently to the scale, in the form of a sleeve, fitting to the outside of the cistern, the latter being of cylindrical form, and in providing narrow horizontal slits in the said sleeve, from the upper edges of which the scale is graduated. Before taking an observation of the barometer, the scale is adjusted by a rack and pinion to bring the edge of the slit exactly to the level of the mercury in the cistern, and so the mercury in the tube is made to indicate accurately upon the scale, the pressure of the atmosphere.

PIN-STICKING MACHINERY.—This invention consists in certain improvements in the well-known pin-sticking machine which constitutes the subject-matter of Letters Patent originally granted to Samuel Slocum in the year 1841, and extended and re-issued in the year 1855, whereby the pin-driving, the paper-feeding, and the crimping-apparatus are operated in a proper manner and with great rapidity through the agency of a constantly revolving shaft driven by steam, water, or other motive power, and the machine is made double-acting and so saves the time ordinarily lost in running back the sliding head between the successive operations of the driving apparatus. The inventor of this ingenious combination of machinery is J. W. Naramore, of Derby, Conn.

VARIABLE CUT-OFF GEAR.—This invention consists in certain improved mechanism applicable in combination with an oscillating or rolling cut-off valve which is independent of the induction valve or valves, or with two rolling or oscillating valves which are applied at opposite ends of the cylinder, and which constitute also the induction valves, whereby provision is made for varying the point of cut-off, either under the control of the governor for the purpose of governing the engine or by any suitable means of adjustment, to cut off at such points as may be desired. Messrs. Gates, Frazer & Chalmers, of Chicago, Ills., are the patentees of this excellent arrangement.

SELF-ACTING MULES.—This invention consists in certain means of effecting the drawing-in and running-out of the carriage of a self-operating mule, and the driving of the drawing rollers and of the quadrant from which motion is communicated to the spindies, whereby the mule is much simplified in its construction and the movements of the above specified parts are rendered much more uniform and positive than when the said parts are driven by the system of chains, ropes, bands and racks commonly employed for the purpose, and the delay, trouble and cost of the repairs and re-adjustment of the said chains, ropes, bands and racks, which are so frequently necessary, are obviated. The credit of this very useful invention is due to John Wright, of Worcester, Mass.

ABDOMINAL SUPPORTER.—This instrument is designed to take the place of the towel-bandages usually applied to the person after delivery, and is for the purpose of supporting the abdominal wall when in a flaccid condition, and retaining the uterus and other contiguous organs in *situ*, at the time when there is constant tendency to displacement; it is so constructed as to enable it to be adjusted and adapted to any size or condition of person, and tightened and loosened above and below as occasion may require, and otherwise adjusted to suit the condition and position of the patient, by the patient herself. This improvement was designed and patented by an eminent *accoucheur*, B. A. Grover, M.D., of Momence, Ills.

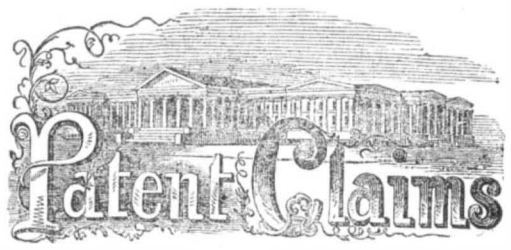
PADDLE-WHEEL.—The object of this invention is to avoid the loss of power attending the "lift," as it is ordinarily termed, which is caused by the action of the paddles, as they leave or pass out of the water. The invention consists in having the buckets placed in or attached to sliding frames, which are fitted between suitable guides, and so arranged that the desired object is attained by a very simple means, and without any appreciable loss or consumption of power by friction. The patentee of this paddle-wheel is J. W. Gorman, of this city.

PRINTING-PRESS.—This invention relates to an improved printing-press, for printing cards, bills and general work, such as is usually known as a "job-printing press." The invention consists in the employment of a platen, a lever-operating frame and inking device, arranged for joint operation in such a way that an exceedingly simple, efficient and economical press is obtained. It is the product of the combined experience and ingenuity of A. & B. Newbury, of Windham Center, N. Y.

ALARM ATTACHMENT FOR TILLS.—This invention consists in the employment or use of a series of bolts placed within a hinged-plate, which is connected with a bell-striking mechanism, and so arranged with keys that a person unacquainted with the position of the parts cannot open the drawer or till without sounding an alarm; the several parts admitting of change or permutation, so that if their position should casually become known to a dishonest person, they may easily be so arranged as to cause different keys to be acted upon, in order that the till or drawer may be opened, legitimately, without actuating the bell-striking mechanism. E. B. White, of Nashua, N. H., is the patentee of this "terror to evil-doers."

All the above inventions were patented on the 5th inst., and the claims will be found in our regular list in the present number.

IMPROVEMENT IN MUSICAL INSTRUMENTS.—A patent has lately been taken out in England by J. Robertson, for an invention which relates to a most simple method of increasing the volume and richness of tone of musical instruments. As applied to violins or similar stringed instruments the sounding-board is made somewhat thicker than those in common use, and the inside is deeply grooved, longitudinally, in parallel lines. The grooving operation removes the white fiberless wood leaving the more fibrous portion standing. The back of the instrument may also be grooved, but the sounding-board is the most essential feature of the improvement. The sounding-boards, and their supports, of piano-fortes may be grooved in a similar manner, and with good results. The grooves leave the spaces of wood between them in such relative positions, that an increased resonant vibratory action is thereby caused, which thus greatly improves the tone of the instrument.



ISSUED FROM THE UNITED STATES PATENT OFFICE

FOR THE WEEK ENDING JULY 5, 1859.

[Reported Officially for the SCIENTIFIC AMERICAN.]

Pamphlets giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

24,607.—Demas S. Barnes, of New York City, for an Improved Furniture Caster:

I claim the spherical roller, B, with its axle running in the frame-work, C C, in combination with the two convex surfaces, E and F, or with the convex and concave surfaces, E and F, so as to enable the same readily to revolve on a vertical axis, the whole being constructed, combined and enclosed in the tube or case, A, substantially as herein described and for the purposes set forth.

24,608.—Benj. Billings, of Macedon, N. Y., for an Improved Water-wheel:

I claim the conical crown, A, and conical wheel, B, constructed and combined substantially in the manner and for the purposes specified.

24,609.—Lewis Bishop, of Talladega, Ala., for an Improvement in Cotton Harvesters:

I claim the endless picker chains, F, placed on the cylinder, E, in connection with the brush cylinder, D, the above parts being attached so a cart or to a box or receptacle, A, mounted on wheels, and the whole arranged to operate as and for the purpose set forth.

[In this invention a series of endless picker-chains are placed on a revolving cylinder, and used in connection with a revolving stripping brush, these parts being attached to a cart, or box mounted on wheels, and the whole being so arranged that as the cart is drawn along the cotton will be picked from the bolls by the picker-chains, and the cotton stripped therefrom by the revolving brush, and deposited in the box or body of the cart.]

24,610.—Snowball Botterill, of Westmoreland, N. Y., for an Improvement in Hook for Whiffle-trees:

I claim the combination and arrangement of hooks, D D, and spring button, E, in the manner and for the purposes set forth.

[This invention consists in securing the tugs or traces to the ends of the whiffle-tree by a button, over which the cock-eye of the tug passes, which is made to work in and out of a socket, and pressed out against two hooks, so that when the tug is properly placed on the button it is retained securely to the whiffle-tree and is not liable to get detached, while at the same time it can be readily attached or disengaged in "hitching up" or removing the horses from the vehicle.]

24,611.—Henry W. Bowen, of Providence, R. I., for an Improved Wind-engine:

I claim the frame, D, provided with sails, E, and attached to the shaft, C, in connection with the bent lever, G, connected with the sails by the rods, F, and arms, b, the links, H, spring rod, I, and the weight, J, and spring, K, or their equivalents; the whole being arranged substantially as and for the purpose set forth.

[A series of horizontal pivoted sails, placed in a frame, are used in this invention, and certain mechanism is used in connection with them, so arranged that the wind in acting upon the sails is made to give, in connection with the weight or springs, either or both, a reciprocating movement to the device, and a very simple and efficient engine is obtained for transmitting power by the action of the wind.]

24,612.—Robt. Brown, of Stroudsburg, Pa., for an Improved Washing Machine:

I claim the arrangement in the trough, E, of the chambers, S S, and transverse strips, h h, with the bars, a a, when the chambers stand behind the strips, and the strips are placed in such a relation to the bars, a a, that they will pass between them, and thus at the same time press and rub the clothes; the several parts being constructed and operating substantially in the manner and for the purpose set forth.

24,613.—Thos. B. Butler, of Norwalk, Conn., for an Improvement in Harvesting Machines:

I claim the employment of the cams and guides, S, for the purpose of giving a forward and backward motion to the cutter bar and cutters, substantially as set forth.

24,614.—W. J. Cantelo, of Burlington, N. J., for an Improved Method of Reducing Wood, &c., to Sawdust, or Finer Grains:

I claim reducing glutinous, fibrous, and other tough materials, to powder, by placing the ends of blocks of the same opposite to and in contact with each other, and presenting them simultaneously, and at the point of junction, to the edge of a circular or reciprocating saw, with the aid of the appliances described, or any equivalent to the same.

24,615.—Michel Celerier, of Philadelphia, Pa., for an Improvement in Machinery for Webbing Single Strands of Thread:

I claim the combination of the pulley, E, the sliding car, D D D, the fork, H H, and the eye-piece, L, arranged and operating substantially as described, for preparing silk for making twist.

24,616.—Chas. Clareni, of New York City, for an Improved Wrought-nail Machine:

I claim the combination of the top and side hammers and vibratory anvil, substantially as described, so as to form two or more nails at a time without turning the rod, as specified.

I also claim the apparatus for connecting the driving shaft with the top hammer, by which it receives its motion in a proper manner, as specified.

I also claim the connection of the side hammers with the driving shaft to produce the requisite motions thereof and allow said hammers to be raised and lowered, as and for the purposes set forth.

I also claim the arrangement and operation of the cutter, as described, for severing the nail from the rod.

24,617.—Isaac Cook and John T. Bever, of Haynesville, Mo., for an Improvement in Plows:

We claim the combination and arrangement of the sharp-edged land-side wheel, D E, with a reversible, double-pointed mold-board, A B C, which has no land-side bars, substantially as and for the purposes set forth.

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24,618.—Geo. H. Corliss, of Providence, R. I., for an Improvement in Steam-Engines:

I claim imparting to the liberated slide-valves of steam-engines their closing movements by springs, so connected with the valve gear that whilst these springs impart the same initial force to the valves, at every operation, the expansive force which these springs exert varies with every change in the range of movement given to the valves.

I also claim imparting to the liberated slide-valves of steam-engines their closing movements, by springs combined with a curved moving support, in such manner that the spring applies itself tangentially to the said support, and that the effective length of the spring varies with the tensive force which it exerts.

24,619.—B. M. Dorr, of Kenawee, Ill., for an Improved Method of Opening and Closing Farm Gates:

I claim the arrangement of the pinion, i, the toothed racks, n n', and the levers, d d', to operate in combination with the slotted rods, K K', and the crank levers, E E', for the purpose of opening and closing the gate, A A', substantially as described.

[This is a very simple and efficient device, the two parts of the gate being made to slide in opposite directions by means of racks and pinions, so that the gate is opened and closed by the action of an approaching and departing vehicle.]

34,620.—Epes E. Ellery and Joseph F. Ellery, of New York City, for an Improvement in Water-proof Paints:

We claim the composition prepared and composed of the materials as described, in the proportions set forth, for the purpose of making water-proof paint.

24,621.—H. C. Emery, of Lincoln, Ohio, for an Improvement in Mills for Crushing Cane:

I claim the adjustable shafts of the rollers in slide bearings, at top and bottom, operating them in a rectilinear frame, in a direct manner for giving a wedge pressure, providing them near their top with flanges and a groove and a bevel on their bottoms, from the periphery toward the shafts, substantially as described—the several parts standing in the relation to each other as specified, for the purpose set forth.

24,622.—A. L. Fleury, of Baltimore, Md., for an Improvement in Lamps:

I claim, first, The quick-lime cones, c c', or their equivalents, arranged substantially as described, for the purposes set forth.

Second, In combination with the above I claim the flanged cap, n n' n", substantially as described.

24,623.—Reuben Fretz, of Montville, Ohio, for an Improved Machine for Finishing the Exterior of Rims of Carriage Wheels:

I claim combining in the arm that gages the plane devices for varying the hight of the radial arm with the devices for varying its length, so as to enable the operator to dress a wheel straight or square across the edge, substantially as described.

I claim making the arm or bar, K, which guides the plane in the arc of a circle, to vibrate in the stock, so as to adjust and fasten it in the position desired.

24,624.—P. W. Gates, D. R. Fraser and T. Chalmers, of Chicago, Ill., for an Improvement in Cut-off Gear for Steam-Engines:

We claim the combination of the two levers, D D', and their dogs, E E', the lever or levers, C, and its or their teeth, b b', and the eccentric curved plate or plates, H, the whole applied to the stem or stems of the valve or valves, to operate substantially as set forth.

And we also claim, in combination with the said levers, teeth and dogs, and the eccentric curved plate or plates of the arm, j, on the valve stem, and the spring or stationary curved surface, k, applied and operating together substantially as and for the purpose specified.

24,625.—Ira Glynn and Mikel Borowsky, of Placerville, Cal., for an Improved Machine for Cutting Ends of Billiard Cues True:

We claim the application of the reversed A knife or cutter, E, and the spring jaws, C C, for holding the cue so as it can be cut off square for the leather; these jaws will open or close to suit the size of the cues; the whole as set forth in our specification.

24,626.—George P. Gordon, of New York City, for a Printing Press:

I claim, first, Taking the sheet from the feed-board by grippers or their equivalents, and presenting it directly to or upon the form of types, thence conveying it to the place of impression so that it may be printed.

Second, The combination of a reciprocating bed with a set of sheet-receiving grippers, so that the movements of the bed may control the action of the grippers, in order that the sheet may be taken from the place of feeding to the place of printing by such grippers.

Third, The combination of a vibrating platen, having a stationary or fixed axis upon which to vibrate, with a reciprocating bed.

Fourth, The combination of a set of sheet-piling rippers which will peel or take the printed sheet from the face of the type and pile it on its place of deposit, with a reciprocating bed operating substantially as described.

Fifth, By use of automatic grippers, piling the sheets directly before or in front of, and under the eye of the operator, so that he may at once detect any imperfection in the impression.

Sixth, The combination in one and the same machine of a set of grippers to take the sheet and carry it to the place of printing, with another set of grippers to take the sheet from the form and pile it, substantially as described.

Seventh, The arrangement and construction of a chase, as described, in combination with the piling grippers, substantially as set forth.

Eighth, The giving a reciprocating vibratory motion to a bed, or carriage, allowing the necessary intervals of time for the purpose of receiving the sheet, or the impression, either or both of them, by means of the cam forming part of the bed, the cranked shaft, the vibrating arm, and the connecting rod, or their equivalents, all of which is fully described and set forth.

24,627.—Wm. Gorman, of New York City, for an Improved Paddle Wheel:

I claim the sliding paddles or floats, D, placed between the traverse bars, a, of the arms, C C, of the wheel, and arranged with the catches, F, and stationary cam, G, or their equivalents, to operate as and for the purpose set forth.

24,628.—S. N. Gragg, of Shelburne Falls, Mass., for an Improvement in Corn Huskers:

I claim the curved or convex rest, E, in combination with the reciprocating knife, k, arranged and operating as described, for the purpose set forth.

24,629.—Wm. Grout, of Worcester, Mass., for an Improvement in Sewing Machines:

I claim, first, The arrangement of the feeding bar, needle and looper, in the manner described, so that the movement of the cloth shall aid in extending the looper thread and in tightening the needle thread, and this when the needle is out of the cloth.

Second, The arrangement of the looper and forceps, as described, so that the forceps shall draw the loop of the needle thread across the path of the looper and in line with the movement of the cloth.

Third, The combination of the needle and looper, when arranged as described, so that both shall reciprocate in straight lines, and also so that by merely changing the length of the looper a single or double stitch may be formed, in the manner described.

24,630.—Benj. A. Grover, of Momence, Ill., for an Improvement in Abdominal Supporters:

I claim, first, Constructing an adjustable spring-steel frame, of the form described, by combining, arranging and securing together a series of spring bars, substantially in the manner and for the purpose described.

Second, I claim covering the concave portion of said frame with a canvas or other cloth, Z, whose edge or border is gathered and drawn together over the outside edges of the said spring frame, by an india-rubber or other elastic cord, C, so as to give the covering portion of said canvas or other cloth the character of an elastic cushion, no matter what may be the extent of the contraction or expansion of the spring frame, as described.

Third, I also claim attaching the upper and lower straps, P P', which respectively branch upward and downward from the band, v, of the main strap, S O, at the points of the spring frame, and in the relation to each other and the center or main straps, S O, described and represented, so as to give an upward pressure to the spring frame, and for other purposes set forth.

24,631.—Elijah Harris, of Princeton, Ill., for an Improvement in Horse Rakes:

I claim the lever, D, with the arms, d d, and the projection or finger, c, in combination with the stop, a, substantially as set forth and specified.

24,632.—W. Hartsfield, of Thomaston, Ga., for an Improved Door Fastening:

I claim the arrangement of the bar, C, which is attached to the inside of a door, to operate in combination with the staple, D, and with the bolt, E, and spring, d, substantially as and for the purpose described.

[By the aid of this invention a door is fastened perfectly secure, so that it cannot be forced open from the outside.]

24,633.—Henry Hays, of New York City, for an Improved Machine for Boring:

I claim the arrangement of the adjustable head blocks, c, carrying the spindles, d, of the boring tools, when combined with the spring-tightening pulley, o, in the manner and for the purposes specified.

24,634.—John Henderson, of Horseheads, N. Y., for an Improvement in Stoves:

I claim the construction and arrangement of the ventilating passages, i i, and concealed flues, m m, the former having their origin in the heating chamber, K, and terminating at or near the top of the oven, and the latter starting from the lower part thereof, and terminating in the flue, G, whereby external air is admitted, and currents thereof passed through the oven, substantially as and for the purposes specified.

24,635.—Isaac C. Shuler, of Amsterdam, N. Y., for an Improvement in the Construction of Sheet-metal Coffins:

I claim, first, The arrangement of stiffening the lower part of a sheet-metal coffin by locking together the scrolled edges of the sides and bottom, forming a firm rim, when they are soldered together, substantially as described.

Second, I claim the sheet-metal rim, c, on the outside of the walls, as a means of stiffening the base, either with or without a filling of molten metal, according to the size of the coffin.

Third, I claim the rim, d, of sheet-metal, single or scrolled, forming an inside chamber, which may be filled with molten metal or left hollow, according to the size of the coffin.

Fourth, I claim a cast metal rim, f, with a deep groove on the under side, which receives, straightens and stiffens the walls, and which serves to support the lids.

Fifth, I claim setting the pillows or braces, x, at the corners and around the body of the coffin between the inward projections of the rims, d and f, which give them an extended purchase, for the purpose of stiffening the walls, substantially as described. I also claim the peculiar braces, K, to prevent the lateral racking of the bottom.

Sixth, I claim the arrangement of pressing inverted beads or recesses, in any required number, in the sheet-metal of the lid, walls and bottom of a metal coffin on the inside and on the outside of the same, which may be filled with molten metal in the large size, and left empty in the small size coffins for the purpose of securing, by a peculiar mode of manufacture, of a level surface between the indented parts described.

Seventh, The arrangement of fastening firmly on the under side, near the outer edge of the air-tight lid of a sheet-metal coffin, a cast metal rim or its equivalent, for the purpose of strengthening this lid, and also for fitting into the groove in the rim, F, on the upper edge of the walls of the coffin, substantially as described.

Eighth, The arrangement of fastening around the face-window on the under side of the air-tight lid of a sheet-metal coffin, a cast metal sash or rim, m, which receives and supports the face-glass when it is cemented in its proper place.

Ninth, I claim the arrangement of fastening permanently, on the under side near the outer edge of the sheet-metal blind, m, which covers the glass in the face-window of a sheet-metal coffin, a cast metal brim, O, or its equivalent, for the purpose of strengthening and furnishing a means of securing the same to the outer lid which covers the air-tight joint, substantially as described.

Tenth, I claim the arrangement described of two entire, distinct, separate sheet-metal lids.

24,636.—G. W. Smith, of Hartford, Conn., for an Improved Butter-cooler:

I claim the arrangement of the air-tight ice chamber, D, in combination with the butter-plate, A, and with the cup, B, substantially as and for the purpose set forth.

[This is a very neat and ornamental device, and it keeps the butter cool and free from the influence of the melting ice.]

24,637.—Daniel Hess, of Uniontown, Iowa, for an Improved Device for Heating Steam-boilers:

I claim, first, The combination with a steam-boiler of the tight external casing, A, and fan, H, for the purpose of producing currents of air around the boiler, substantially as set forth.

Second, In combination with the subject of the first claim, the stove, D, provided with a smoke-pipe, E, through which the products of combustion pass, while the heat passes into the casing, substantially as set forth.

24,638.—Hervey Hoffman, of New York City, for an Improved Automatic Fan:

I claim the arrangement of the rock-shaft, D, arms, F F', bells, f f', and rollers, G, or the equivalents, to operate in combination with the fan-carrier, H, substantially as and for the purpose specified.

[By this invention a large fan can be operated with a small amount of power, the gravity of the fan-carrier, assisted by the weight of the fan itself, causing the same to a sume a swinging motion.]

24,639.—Isaac B. Howe, of Northfield, Vt., for an Improvement in Railroad Chairs:

I claim the one-lip chair, secured by the single bolt, in combination with the permanent fishing piece, arranged and operating in the manner set forth, for the purpose specified.

24,640.—Julius C. Hurd and Moses A. Johnson, of Dorchester, Mass., for an Improvement in Manufacturing Wadding:

We claim, as a new article of manufacture, the described wadding, having its two surfaces felted, as set forth, for the purpose specified.

24,641,—Obed Hussey, of Baltimore, Md., for an Improvement in Mowing Machines:

I claim, in combination with the ordinary apparatus fixed to the extreme end of the finger beam, and called a track clearer, a similar apparatus at the opposite or frame-end of said beam, when so arranged as to sweep the cut grass towards the center of the swath, and leave it in a windrow behind the machine, substantially as described.

24,642.—Joshua Irving, of New York City, for an Improved Machine for Turning Ovals:

I claim the sliding disk and driving im combined with the center mandrel and slides, substantially as and for the purposes set forth.

24,643.—Joseph Jorey, of Rocky Hill, Conn., for an Improved Horse-shoe:

I claim the combination of the plate, B, cork, C, shoe, A, substantially in the manner as and for the purpose described.

24,644.—Philip Kribs, of Jefferson Furnace, Pa., for an Improvement in Cultivators:

I claim the arrangement of the bars, A B C, metal frame, G, handles, H, shanks, E', teeth, E, bar, I, and shafts, F, as described, for the purposes set forth.

24,645.—Philip Lebzetter, of Lancaster, Pa., for an Improvement in Horse-rakes:

I claim the double axle, A B, brace and sliding bands, c, hinged braces, E, slot-hook and staple, F x, binding screw, D, hinged-rod and beam, G and H, when these parts are combined, substantially in the manner and for the purpose specified.

24,646.—Lewis Lillie, of Troy, N. Y., for an Improvement in Vault Doors and Cast-iron Safes:

I claim the arrangement and combination of a series of pipes or tubes, a b and c, and the filling of the same with cast-steel, hardened, or with refined cast-iron, as and for the purposes described.

24,647.—Lewis Lillie, of Troy, N. Y., for a Improved Door-knob Bolt:

I claim the knob-bolt or spindle, B, constructed in the manner as and for the purposes substantially described.

I further claim the switch, D, and the nut, c, arranged and fastened to and upon the knob-bolt or spindle, B, in the manner as set forth.

24,648.—Matthias Ludlum, of Fair Haven, Vt., for an Improvement in Trunks:

I claim the combination with a water-tight shell or body-part, A, to a trunk or box, having ordinary or any other suitable inner and outer lids, C and D, of a valular spring come-lid, B, of water-tight construction, and arranged to occupy an immediate position in relation to the inner and outer or ordinary lids, C and D, essentially as and for the purpose or purposes set forth.

24,649.—Thomas P. Marshall, of Trenton, N. J., for an Improvement in Buckles:

I claim a buckle constructed of a sliding case, A, with the platform, d, and slot, B, in combination with the nose, i, and otherwise arranged as set.

[This is a very simple and cheap buckle, and it is so arranged that it adjusts itself to any length of the strap.]

24,650.—Jarrett Megaw, of Wilmington, Del., for an Improvement in Rotary Pumps:

I claim combining the water-packing chambers formed around the axes or shaft, between the suction-pipe and stuffing-boxes, with the descending-main or discharge-pipe of the pumps, substantially as and for the purpose set forth.

24,651.—Rich'd L. Mills and Paul Carpenter, of Lancaster, Ohio, for an Improvement in Railroad Car Couplings:

We claim the arrangement of the sliding frame, K, and vibrating frame, J, in combination with the flat locking-key, L, the whole being constructed and arranged for joint operation substantially as set forth.

24,652.—Z. N. Morrel, of Cameron, Texas, for an Improvement in Machines for Planting Cotton-seed:

I claim, first, The combination and arrangement of the one side-wheel, D, cylinder, F e, stirrer, E c, gear-wheels, a b, mortised beam, A d f, share, H h, and boot, I, substantially as and for the purpose described.

Second, The arrangement of the V shaped fender, with the harrow teeth and with the devices included on the first claim, substantially as and for the purpose set forth.

24,653.—A. A. Moss, of Philadelphia, Pa., for an Improved Elastic Friction Roller:

I claim the elastic friction apparatus described, the same consisting of the ball or sphere, A, spring, B, and case or hole, C, constructed, arranged and combined together in relation to each other, in the manner set forth and described, irrespectively of the plate, e, or the conical form of the spiral spring, B.

24,654.—J. W. Naramore, of Derby, Conn., for an Improved Pin-sticking Machine:

I claim, first, Operating the driver or drivers and the crimping and feeding apparatus, or any portion of the same, by means of a clutch or clutches, carried by a constantly-rotating shaft, and thrown into gear therewith, to effect such operation by the action of the sliding-bed or pin-carriage as the latter, after having received the pins, completes its movement to the necessary position for the sticking operation substantially as described.

Second, The combination with a single reciprocating sliding-bed or pin-carriage and a single conductor, of two drivers, and two sets of crimping and paper-feeding apparatus, arranged on opposite sides of the mouth of the conductor in such a manner that the said bed or carriage, in every movement in either direction, is caused to be filled with pins from the conductor, and to convey them to a proper position relatively to one or the other of the drivers, to be thereby driven into the paper supplied, and crimped by its respective feeding and crimping apparatus, substantially as described, whereby I effect a saving of the time heretofore lost in running the bed twice under the conductor to be once filled.

Third, Effecting the combination between the sliding-bed or carriage and a clutch, carried by a constantly-revolving shaft, to operate a driver, a crimper and a feeding apparatus, or either of them, by means of a toothed lever, R or R', a spring, T, or notched slide, P or P', plate, U or U', with an inclined edge and a sliding-tooth, i, the whole applied and operating substantially as described, to permit one, and only one revolution of the loose portion of the clutch, and hence but a single operation of the part or parts driven by it.

24,655.—A. Newbury and B. Newbury, of Windham Center, N. Y., for an Improvement in Hand Printing-presses:

We claim the arrangement and combination of the slotted frame, E, adjustable bar, G, platen, F, roller-frame, K, and rotating ink-table, L, substantially as and for the purposes shown and described.

24,656.—Ellis Nordyke and Addison H. Norkyke, of Richmond, Ind., for an Improvement in Flour-bolts:

We claim the band, c, encircling the shaft, M, in combination with the spring-catches, S S S, for the purpose described.

Second, We also claim making the movable slide, H F, in two parts, jointed, substantially as and for the purpose set forth.

24,657.—Anthony Overocker, of McHenry, Ill., for an Improvement in Clover-hullers:

I claim the combination of the concave, C, and cylinder, E, with the adjustable sliding-door, F, the several parts being arranged and constructed substantially in the manner and for the purpose described.

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24,658.—Andrew Paterson, of Birminghom, Pa., for an Improvement in Manufacture of Hoes:

I claim the combtnation of the two jaws, d d, which clasp the blade, with the head, b, and the blade arranged and constructed substantially as set forth.

24,659.—John Percival, of Auburn, N. Y., for an Improvement in Piano-hammers:

I claim constructing and arranging the cushion forming the elastic covering to the hammer-head, substantially a s described for the purpose as set forth.

24,660.—Albert Potts, of Philadelphia, Pa., for an Improvement in Setting Gas-meters in the Walls of Buildings:

I claim the manner described of adjusting a gas-meter to an auxiliary case of the character substantially as specified, so that the meter is applied to a building in a neat and secure manner, and, at the same time, the examination of the same, to ascertain its condition or the amount of gas consumed, from the outside of the building, is render d practicable and convenient, all as and for the purp ses set forth.

24,661.—Thomas B. Quigley, of Galion, Ohio, for an Improvement in the Mode of Regulating the Exhaust in Locomotive-engines.

I cloim, first, The sliding throttle-valves, g and f, when combined with the exhaust-pipes of a locomotive-engine, substantially in the manner and for the purpose specified.

Second, The sliding box, o, with apertures, r, in combination with the chest, b, as set forth.

24,662.—D. B. Ray, of Galena, Ill., for an Apparatus for Punching Stereotype-plates:

I claim the arrangement of stamping-bars, D, upon A B, when provided with the characters to be printed or stereotyped, so that they will all work to a common centre and imprint the ch cters upon the face of the type-metal, substantially in the manner and for the purposes set forth.

I also claim arranging upon the end of bar, F, knives, a b, for the purposes specified.

[A number of moveable bars are arranged upon a frame composed of two concentric semi-circular plates, in such manner that they will all point to a common center; and when pressed upon by the hand, or forced down by percuss on, a die of the character to be formed, which is fixed on the end of each bar, will strike the face of the type-metal, and form the desired impression thereon, and this strip of metal is so arranged that every die will strike it perpendicular to its face.]

24,663.—John A. Reed, of Jersey City, N. J., for an Improvement in Trunnion Box-lining for Oscillating-engines:

I claim the employment, in combination with the conical trunnions, of slit cap-like linings, D D, applied to the boxes with screws and nuts, or other equivalent means of forcing them up towards the sides of the cylinder, substantially as described.

24,664.—Geo. P. Sanborn and Willis Mansfield, of New Haven, Conn., for an Improvement in Elastic Railroad-frogs:

We claim an elastic frog, constructed of layers of plate-metal and wood, substantially in the manner specified, a d either w th or without layers of vulcanized-rubber.

Also, we claim constructing an elastic frog with end slots, suitable to r ceive the lower flange and neck of a rail, as specified, whereby the frog may be kept in alignment as described,

24,665.—Thaddeus Selleck, of Greenwich, Conn., for an Improvement in Protecting Surfaces of Articles of Iron:

I claim, as a new article of manufacture, a horse-shoe, or other article, as indicated, made by unit ng Franklinite pig-metal with the surface of iron as set forth.

24,666.—Horace Smith and D. B. Wesson, of Springfield, Mass., for an Improvement in Revolving Fire-arms:

We claim the wedge, n, on the top of the nose of the hammer, the spring, m, and stop-bolt, k, when combined for the purpose and operating in the manner as described.

24,667.—James Spear, of Philadelphia, Pa., for an Improved Ironing-pan for Ranges or Stoves:

I claim an irouing-pan, constructed with a perforated bottom, in the manner and for the purpose described.

24,668.—Wm. Steams, of Manchester, N. H., for an Improvement in Picker-motion for Power-looms:

I claim extending the picker-staff down through and below the rocker, and through the rail, as described.

I claim the rocker, D, made to receive the staff, in the way and manner described.

And, in combination with the rocker, D, I claim the hook, G or G', whether made separate or cast on the rocker, for the purposes set forth.

I claim making the picker-staff adjustable in the rocker, in the manner described, or in some equivalent manner.

I claim making the stud surrounded by the coiled spring, P, smaller in the middle than at the ends, to allow the spr ng to contract in diameter in the middle as it is drawn in working.

I also claim making that portion of the stud surrounded by the stationary end of the coiled spring permanent or stationary, and that portion surrounded by the moving end of the spring to revolve, to facilitate the working of the spring.

24,669.—Joseph W. Strange, of Bangor, Maine, for an Improvement in Scales for Weighing:

I claim, first, Arranging the beam in such a manner that the several indications or scales marked on the same, can be brought before the eye of the operator, by turning the beam, substantially as described.

Second, The arrangement of the socket, C, so that its end forms the common index-pointer, c, for the several indications marked on the sides of the beam, substantially as and for the purpose specified.

[This invention consists in arranging a loaded scale-beam, which may be triangular, round or polygonal, in such a manner that the weight of the substance placed on the scales can be ascertained by sliding the beam in a socket, the end of which forms a pointer or index, and in which the b am can turn, so that when the several sides of the beam are marked with different gradations, either one may be read off by the operator.]

24,670.—Wm. Stratton, of Philadelphia, Pa., for an Improvement in Gas Retorts:

I cla m the employment of an upright partition, B, dividing the D r tort into chambers, in the manner and for the purposes substantially set forth in the specification.

24,671.—John Stock, of New York City, for an Improvement in Photographic Cameras:

I claim, first, The arrangement of the front plate of a camera, to which the lens-tube is attached in such a manner that the center of the tube may be moved in any desired position for the purpose, as described and in the manner substantially as specified.

Second, I claim the arrangements of the plates, 5 and 8, for the purpose described.

Third, I claim attaching the ground glass-holder to the d of the camera, and the manner of supporting the we ht of the same, substantially as specified.

24,672.—Elam Stockbridge, of Houston, Texas, for an Improvement in Cotton and Hay Presses:

I laim the arrangement, in combination with the horizontal ropes or chains, a' a', vertical windlass, G, horizontal toggles, E E, and horizontal follower, C, of the anxiliary horizontal ropes or chains, a' a' and h, in the manner and for the purposes set forth.

[This is an improvement in that class of presses in which toggles are employed to operate the follower. The invention consists in a peculiar manner of applying a windlass to the toggles and the arrangement of the latter with a stationary cross-head or bar, whereby a very simple and efficient implement is obtained.]

24,673.—Josiah Stubbs, of Dublin, Ind., for an Improved Churn:

I claim operating the butterfly-wings, d and d, with the single crank, k, confined to one side of the cylinder, g', being made to cross the body of the cylinder obliquely, to effect this movement in the manner and for the purpose set forth.

24,674.—Guiseppe Tagliabue, of New York City, for an Improvement on Mercurial Barometers:

I claim the external slotted sleeve-guage, D, applied in combination with the cistern or lower limb of the barometer, and with the adjustable scale, substantially as and for the purposes described.

24,675.—Louis Tregre, of the Parish of St. John the Baptist, La., for an Improvement in Bagasse Furnaces:

I claim the employment of a double feeder, arranged substantially as described, with springs through the blades of the lower feeder to allow the hot air from the furnace to pass from the lower feeder to the upper feeder, for the purpose set forth.

And I also claim arranging, between the two feeders an intermediate chamber to receive and retain the bagasse as it passes from the upper to the lower feeder, and I claim constructing the upper feeder of larger size than the lower feeder, with or without an increas d number of blades, or in an equivalent manner, for the purpose set forth.

And I further claim introducing an independent current of hot, dry a r into the chamber, between the two feeders, substantially as described for the purpose set forth.

24,676.—Jacob W. Truox, of Richford, Vt., for an Improved Head-block for Saw-mills:

I claim, first, The combination and arrangement of the ratchet wheel, F, sett ng-lever, P, cam-wheel, R, guage-wheel, M, and spur-wheel, L, with the spring-latch, H, in the manner and for the purposes specified.

Second, I claim the clamps, V, the lever, W, and eccentric-lever, y, arranged and operating as specified.

[The slide to which the log to be sawed is spiked is operated by means of a lever and pawl, in such a manner that a lateral movement can be imparted to the log, corresponding to the thickness of the planks to be sawed, The head-blocks are clamped to the carriage by means of two clamps, which are operated by a lever, so as to readily disengage the clamps from the carriage for adjusting the head-block to the length of the log to be sawed, and to secure the block and log to the carr age rigidly during the operation of sawing.]

24,677.—Marianus X. Tschus, of Bloomington, Ill., for an Improved Spring-snap for Bridle-reins:

I claim the combination of the two in one, in the manner described and for the purpose described.

24,678.—Levi B. Tyng, of Lowell, Mass., for an Improvement in Cast-iron Tires for Railroad Wheels:

I claim, first, The wedge-shaped braces, d d', arranged in the chamber, C, between the rims, A and B, of a hollow cast-iron tire, so that the chamber is continuous throughout, substantially as and for the purpose set forth.

Second, In combination with the continuous chamber, I claim the groove, b, in the inner rim, arranged substantially as and for the purpose described.

Third, Arranging the ribs, c, alternately on the inner and outer rim, for the purpose of strengthening them without tying them together, substantially as described.

[This inven or has solved the question, to construct hollow chilled cast-iron tire for railroad-wheels, in such a manner that they combine lightness and durability.]

24,679.—Wm. W. Virdin, of Baltimore, Md., for an Improvement in the Mode of Propelling Locomotive-engines on Railroads:

I claim the placing of the friction wheels under the driving-wheels of locomotives, or other vehicles, in the manner substantially the same as described in this specification.

24,680.—Wm. W. Virdin, of Baltimore, Md. for an Improvement in the Mode of Braking Locomotive-engines on Railroads:

I claim the introduction of air into the cylinders of locomotives, in the manner as set forth, and for the purpose of offering a yielding resistance to the the movement of the piston, and by this resistance overcome the momentum of the train.

24,681.—Joseph W. Wattles, of Canton, Mass., for an Improvement in Ring and Traveler Spinning Machines:

I claim the combination and arrangement of the bearing annalus, b, with the r ng or its traveler-carrier, a, substantially in the manner and to operate with the traveler as described.

24,682.—John S. Wertz, of Middletown, Iowa, for an Improvement in Machine for Boring Post-holes in the Earth:

I claim, first, The arrangement and combination of the screw-shaft, D, cross-head, C, grooves, k, pinion, m, and toothed cylinders, B, as and for the purpose shown and described.

Second, The arrangement and combination with the cylinders, B, of the shaft, F, and rotary-scrapers, G, as and for the purpose shown and described.

Third, The arrangement and combination with the frame, A, of the jointed bars, c c, sectors, e, and adjusting rods, h, as and for the purpose shown and described.

[Two toothed cylinders and an augur are used in this invention, in connection with rotating clearers and an adjustable framing, so that post-holes may be sunk in the earth by horse or other power, very expeditiously.]

24,683.—J. W. West, of Hillsboro', Ohio, for an Improvement in Corn-planters:

I claim the arrangement of cords, o and n, with the pulleys, i and j, working in arms, h h, for operating the slotted-plunger, l, and seeding-bar, g, the whole operated together in the manner and for the purpose substantially as set forth.

24,684.—Wm. Wheeler, of West Poultney, Vt., for an Improvement in Manufacturing Machine and Animal Cards:

I claim the construction and arrangement of the sheet-metal backs and wire-teeth, in combination, substantially as described, when united by solder applied thereto by immersion or otherwise.

24,685.—E. B. White, of Nashua, N. H., for an Alarm Attachment for Tills:

I claim, first, The bolt-plate, b, provided with bolts, C, connected by a joint, c, to the box, B, and connected to a bell-striking apparatus, substantially as shown, in connection with the keys, k, and a stop, D, the whole being applied to the till substantially as and for the purpose set forth.

Second, In combination with the bolt-plate, b, bolt, C, and keys, k, the bars, j, and screws, e', in the parts, k', of the keys when the bolt-plate and bar, j, are both connected with the lever, h, on the bell-striking apparatus in any proper way.

Third, The employment or use of the sliding-plate, G, combined and arranged with the bolt-plate, b, and stop, D, to operate automatically as and for the purpose set forth.

Fourth, The employment or use, for the purpose specified, of a supplemental spring, u, fitted in a socket, t, or otherwise arranged to resist the movement of the bar, j, when said bar, j, is used in connection with spring-bolts, C, substantially as described.

24,686.—Loren J. Wicks, Racine, Wis., for an Improved Churn:

I claim the combination of the box, A, the pipe, B, and the box, C, when the same are used in the manner and for the purpose set forth.

Second, Placing the box, C, over the box, A, and providing said box, C, with a screen, D, and depending wire-guaze partitions, E E, substantially in the manner and for the purpose specified.

24,687.—Henry Wiley, of Frankfort, Ohio, for an Improvement in Corn-planters:

I claim the arrangement of the gate, H, wheel, K, bars, B, hopper, g, rods, d, slides, N, and seed-tubes, y, being all constructed, arranged and operated substantially as set forth.

24,688.—Leonard Worcester, of Lebanon, N. H., for an Improved Machine for Boring or Mortising Blind Stiles:

I claim combining the transversely reciprocating carriages, A A, with the cam cylinders, L L, by means of the pairs of vibrating levers, E E and f f, substantially in the manner and for the purposes set forth.

I also clrim the notched plates, N N, for sustaining the stiles during the operation of mortising or boring the same, when the said plates are combined with reciprocating bearings and other suitable mechanism, in such a manner that the necessary laterally reciprocating and longitudinally feeding movements will be imparted to said plates, substantially as set forth.

I claim combining the bearings of the bit shaft, G, with the reciprocati g carriage, C, when the said shaft is so arranged with relation to the notched plates, N N, that the bits which project from the ends of said shaft will act upon the stiles as they are automatically presented to them, substantially as set forth.

I also claim the combination and joint operation with each other of the reciprocating carriages, A A, the notched plates, N N, the pairs of levers, E E and f f, the cam-cylinders, L L, the reciprocating spring pawls, k k, and the bit-carrying cylinder, G, substantially as set forth.

24,689.—W. E. Worthen and H. B. Renwick, of New York City, for an Improvement in Corrugating Sheet-metal:

We claim the method of corrugating or molding sheet-metal by several dies acting in succession, substantially in the manner specified, upon a sheet resting epon a bed, die or dies, so as to cause the metal to conform to shape, substantially in the manner described.

24,690.—John Wright, of Worcester, Mass., for an Improvement in Self-acting Spinning Mules:

I claim the shaft, F, with its screw-thread, d e f, arranged and applied substantially as described, in combination with the carriage, the quadrant and the shaft which drives the drawing rollers, for the purpose set forth.

24,691.—Frederick Baare and J. G. Cawelly (assignors to H. H. Day), of New York City, for an Improvement in Manufacturing Corrugated Fabrics:

We claim the combination of two or more parallel series of corrugations in the same fabric, in such manner that the ridges of the adjacent series alternate.

We also claim combin ng rubber strands (one or more) with a textile material, in such manner that when the rubber contracts, the compound fabric gathers up into two or more parallel series of corrugations whose numbers alternate.

We also claim combining rubber strands with a textile material, in such manner that the strands are alternately secured to the fabric and left free therefrom at alternating parts of their length, so that the secured parts of one rubber strand corresponds with the free part of an adjacent one.

We also claim forming the fabric sleazy, at the division lines between the corrugations of adjacent series, so as to ins re uniformity in the form of the adjacent extremities of the corrugations.

24,692.—F. W. Bacon, of West Newton, Mass., assignor to E. H. Ashcroft, of Boston, Mass., for an Improvement in Gage Cocks for Steam-boilers:

I claim the combination of the throat-clearer, C, with the throat and the screw plug gage-cock, and so as to operate therewith, substantially as specified.

24,693.—H. W. Beins (assignor to the New England Car Spring Company) of New York City, for an Improvement in Vulcanized Rubber Car Springs:

I claim the sectional gum car spring of two or more pieces, vulcanized in the manner set forth.

24,694.—E. Culver (assignor to himself and R. N. Fife), of Shelburne Falls, Mass., for Improved Table, and Clothes Dryer:

I claim the described combination of ironing table and clothes' dryer, the table furnishing a support to lhe dryer, and a receptacle in which it may be stowed away, as set forth.

24,695.—A. K. Eaton, of New York City, assignor (through G. S. L. Cummins *et al*) to the Joslin India-Rubber Company, for an Improvement in Vulcanizing Rubber:

I claim the use of the sulphide of manganese in the curing of ndia-rubber in the manner specified.

24,696.—O. F. Fuller, of Lamonte, Mich., assignor to himself and W. M. Ferry, of Ferrysburg, Mich., for an Improvement in Railroad Brakes:

I claim the brake blocks, C, pins, a a, and levers, D D, constructed and operating together, substantially as and for the purpose described.

24,697.—J. R. Gates (assignor to himself G. G. Dumont and E. F. Sinker), of Indianapolis, Ind., for an Improvement in Sugar Mills:

I claim the grooved friction rollers, G G G G, when used for stripping the blade from the stalk, substantially as set forth.

24,698.—Joseph Jones (assignor to himself and James G. Bryce), of Philadelphia, Pa., for an Improved Butter-worker:

I claim the use of the yielding beater, G, whether solid or constructed with an open or with a perforated bottom, enclosing an absorbing material, as set forth, in combination with a traveling tray, the whole operated as described.

24,699.—Lansing Marble (assignor to himself and T. North), of Vassar, Mich., for a Method of Manufacturing Baskets:

I claim the described method of forming baskets by passing a series of staves or splints through proper guides over a mold and pressing the same in the proper shape by a suitable piston and form, as set forth.

[By the aid of this machine baskets can be formed with less labor and stronger than by hand, all the staves or splints being kept in the proper places by guides until they are fastened, and the baskets being strengthened by hoops.]

24,700.—Lewis Miller and Jacob Miller (assignors to C. Aultman, & Co.), of Canton, Ohio, for an Improvement in Harvesters:

We claim extending the finger, or platform bar, one or both for enough under the yielding bars, by which they are hung to the main frame, as that the two may be united by suspension rods, which allows them a yielding motion in one direction, and makes them rigid in another direction, and prevents the motions of the main frame from being communicated to the finger-bar, substantially as described.

24,701.—Charles Neale (assignor to Frederick Leibrandt and W. L. McDowell), of Philadelphia, Pa., for an Improvement in Molding Beads on Hollow Ware:

I claim molding for the production of beads, flanges, or other projections and ornaments on the outer sides of cast-metal pots, kettles, and other vessels so as to form the said vessels in two part-flasks, the pattern bed flange, or other projecting ornament, being so constructed, arranged and operated as to admit of its being drawn in and pushed out of the vessel pattern, substantially in the manner described.

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24,702.—A. S. Philips, of Boston, Mass., (assignor to himself and Isaac Adams), of South Boston, Mass., for an Improved Hawse Pipe, for Ships:

I claim a tubular cable guide curved substantially as described.

24,703.—Peter Plater (assignor to himself and J. S. Fleming) of Moore's Hill, Ind., for an Improvement in Corn Planters:

I claim the arrangement of the shield, T, hammer, G, sliding feed bar, I, lever, O, crank shaft, K, and spring, H, the whole being constructed for operation, conjointly, as and for the purpose set forth.

24,704.—John I, Rollow (assignor to Chas. C. Wellford), of Fredericksburgh, Va., for an Improvement in Threshing Machines.

I claim the combination of the inclined carrier, H, with the shoot, I, and curved screen, J, the whole being constructed, arranged and operated in the manner and for the purposes set forth.

24,705.—Wm. Spink (assignor to Oliver A. Washburn, Jr.), of Providence, R. I., for an Improved Machine for Pointing Nails and Spikes:

I claim the combination of the bunter, G, the pointer, F, and the spring, I, with each other, and with the back piece and other parts of the reed machine, or with the corresponding parts of any other nail machines, constructed and operated substantially in the manner as set forth.

24,706.—Geo. C. Wheeler, of Graysville, Ga., assignor to himself and Geo. Calvert, of Upperville, Va., for an Improved Machine for Washing and Amalgamating Gold:

I claim, first, The relative arrangement for united operation of the hopper, I, horizontally revolving vertical tubes, H H H, horizontally revolving rakes, G G', G'', and stationary washing vessels, B C, substantially as and for the purpose described.

Second, Making the receiver or washing vessel into two parts, B C, and combining with the part, C, an adjusting device, D, a a, substantially as and for the purpose described.

24,707.—W. W. W. Wood and Henry Howson, (assignor to John Rice,) of Philadelphia, Pa., for an Improved Device for Operating the Cut-off Valve of Steam-engines:

We limit our claim to causing the positive power of the engine to operate the throttle valve, by the employment of two vibrating, reciprocating or rotating strikers, actuated by any positive movement of the engine, in combination with two inclined planes intervening between the said strikers, and the valve or appliances connected therewith, any governor being so connected to the strikers or to the inclined planes, that the movement of the governor caused by any increase or diminution in the speed of the engine, shall change the position of the inclined planes in respect to the striking or that of the strikers in respect to the inclined planes, and that the latter may thereby be the intermediate means of regulating the extent of the opening of the valve to suit the speed of the engine while the actual movement of the valve is effected through one or the other of the strikers by the power of the engine itself, as set forth.

RE-ISSUES.

752.—Albert Fuller, of Cincinnati, O., for an Improved Faucet. Patented Oct. 16, 1855:

I claim the elastic plug valve attached to a stem, when operated by an eccentric, or its equivalent, substantially as set forth for the purposes described.

I also claim the elastic plug valve, constructed as described, in combination with the cup-shaped cap to prevent the cup from spreading, substantially as described.

753.—James Powell, of Cincinnati, Ohio, for an Improvement in Faucets. Patented March 22, 1859:

I claim the described arrangement of the cam, F, flanges, J and J', longitudinal slot, i, and spurs, K, combined and operating in the manner and for the purposes set forth.

ADDITIONAL IMPROVEMENT.

242.—Hubbard Beebe, of New Haven, Conn., for Mode of Preparing and Mounting Slates. Patented March 29, 1859:

I claim the combination of leather, or cloth, or felt, (or felting) instead of, or in addition to, india-rubber and gutta-percha, so far as beauty, and economy, and desirableness in use may require, with the metallic band or rim around the edge of the slate, as patented March 29, 1859.

I also claim, as my improvement, the combination of leather and cloth with my metallic rim, or with a waterproof cement of such strength and stiffness as will warrant, to some extent, the disuse of said metallic rim, especially in mounting slates in portfolio form or forms, as set forth in the specification and accompanying drawings.

EXTENSION.

Isaac T. Grant, of Shagticoke, N. Y., for an Improvement in Fan Mills. Patented July 10, 1845.

I claim the manner in which I have arranged the screen F, and the chess-board, H, and combined them with the screens ordinarily used, so as to obtain two distinct currents of wind, and to subject the falling grain to the stronger currents below the screen and chess-board, thereby blowing off the heavier portions of foreign matter, whilst the chaff is blown off by the ordinary currents in the upper compartments of the shoe.

DESIGNS.

1,112.—James Greer and Rufus J. King, of Dayton, Ohio, for Design for Cooking Stoves.

1,113.—James Greer and Rufus J. King, of Dayton, Ohio, for Design for Sides and Doors of Cooking-Stoves:

1,114.—Henry Hebbard, of New York City, for Design for Spoon and Fork Handles.

1,115.—Wm. W. Wilson, of Pittsburg, Pa., for Design for Sundials.

1,116.—James Bogle, of West Newton, Mass., assignor to himself and Daniel Bogle, of Dover, N. H., for Design for Floor Oilcloth:

1,117.—James Bogle, of West Newton, Mass., assignor to himself and Daniel Bogle, of Dover, N. H., for Design for Floor Oilcloth.

1,118.—Garrettson Smith and Henry Brown, (assignor to J. G. Abbott and A. Lawrence), of Philadelphia, Pa., for Design for Stoves.

1,119.—Wm. W. Stevens, of Westbrook, Maine, assignor to N. P. Richardson & Co., of Portland, Maine, for Design for Fire Frames.

1,120, 1,121, 1,122, and 1,123.—E. J. Ney, of Lowell, Mass., assignor to the Lowell Manufacturing Company, for Design for a Carpet Pattern. (Four Cases.)

H. G. F., of Va.—We shall be happy to insert an engraving of your invention in the SCIENTIFIC AMERICAN if you will send us your model and Letters Patent, and are willing to incur the expense of the cut, which will not exceed $15. It is only good and meritorious inventions that we desire to illustrate, and we think your's belongs to this class. We have no use for the engravings after we have once used them; they can be sent to you by express with the model and Letters Patent. You must be your own judge as to the benefit you will derive from having your invention illustrated on these very liberal terms, and while our chief object is to interest our readers, we are willing you should have, gratuitously, the benefit of the circulation of our journal, which is regularly seen by at least 75,000 persons every week. The charge for the engraving ($15) is merely its cost to us, and while you get an equivalent for your money in the engraving itself, you also have the benefit of a circulation which, taken with the cost of the white paper and the printing so large an edition as we publish, would cost you hundreds of dollars in any other journal but our own.

C. E. N., of Maine.—The lacquer used for brasswork is made by coloring lac-varnish either with turmeric or gumboge. You can obtain these coloring materials at any druggist's store.

C. E. B., of Ala.—The method of propelling vessels by forcing out a stream of water at the stern through a tube by means of a steam-engine is quite old, and was proposed and tried by Rumsey, the cotemporary of John Fitch.

L. B. A., of Wis.—You can only replace the quicksilver rubbed off from the back of your looking-glass, by an amalgam of the same material; as a partial substitute, put on a piece of tin-foil.

D. P., of Ark.—An injunction can be obtained by proper process of law against a Cherokee Indian or any other person within the jurisdiction of the United States Supreme Court, because patents are held, not under local, but United States law.

J. S. H., of Wis.—You can prepare mink and muskrat skins with the fur on, for wearing, by tanning them with weak liquors of sumac or blackberry stems. They should be dried in the shade, and stretched with tacks on boards while drying. You can also tan them by passing them through a solution of soap-suds, and afterwards through a strong alum liquor. Rub the skin with aromatic oil on the flesh side after it is dry.

G. S. K., of Fla.—In admitting the water to the center-vent wheel, you should not carry it down in a straight trunk, and conduct it from thence at right angles in a flume to the wheel, because you lose much of the effect due to the direct pressure. The trunk should be angled from the top of the penstock, and should have no sharp corners. Your arrangement of the wheel and flume is not good.

O. H., Jr., of Cal.—In a windmill it requires 40 square feet of sail surface moving at the velocity of 12 feet per second, with a pressure of 1¼ lbs. on the square foot to be one horse power. The wind must act on the whole 40 feet continually to give out this amount of power. There is no power in such a mill independent of the pressure on the sails; consequently, the power varies with the velocity of the wind.

J. H. W., of La.—A round cistern, 12 feet in diameter and 12 feet in depth, will contain 1,357 feet of water. A four-sided cistern, 16 feet in length, and 16 feet in width, and 22 feet in depth, will contain 5,632 cubic feet of the same element.

N. P., of N. Y.—If you will give us some further information regarding the method by which you keep the battery active for telegraphing through a long circuit, we will publish it with the letter you recently sent us.

S. A. C., of N. C.—The Oswego phenomenon proved to be a humbug got up by an enterprising hotel-keeper for the purpose of raising the wind.

C. R. B., of C. W.—Some of our steamboats have run at the rate of 28 miles in one hour. If you were to enter a tight chamber filled with air ten feet high at the surface of the earth, the pressure would be 15 lbs. on the square inch. There is a work published on ballooning, by Mr. J. Wise, the famous American aerial navigator.

J. O. G., of Mo.—The cheapest mode of heating water, without a regular heater, before it enters a boiler, is to use tubular grate-bars and force the water through them. Cold water may be safely fed into a steam boiler; it should enter at the back end. A suction tube eight inches in diameter will answer for force pumps of five inches diameter each.

C. E. S., of Iowa.—The *Great Eastern* will be propelled by quadruple engines, the aggregate power of which, it is stated, will be about 6,000 horses.

J. C. B., of L. I.—Bone can be stained a deep black by boiling it in a strong solution of logwood and a little copperas. After it is dry, rub an ethereal solution of asphaltum over its surface, and it will become smooth and glossy.

J. W., of Miss.—If a piece of paper, coal, or wood be burned, there exists no less matter than before; all that has taken place is a change of arrangement or combination of atoms.

M. S., of Ala.—With the assistance of a microscope, the grain of gold may be seen divided into fifty millions of distinct parts.

J. P. B., of Mo.—One hundred yards of the raw silk of the silkworm does not weigh a grain; and it has to be doubled and twisted many times to form a fine thread for domestic use. Still finer are the fragile threads of the spider, which, proceeding from 4,000 holes in the little animal, are all twined together to form one slight beautiful gossamer line.

R. M., of Ind.—The invention of the long pendulum was claimed by a London artist named Richard Harris, who applied it to a clock in 1611, which is seventeen years before the time that Galileo directed one to be made.

Money Received

At the SCIENTIFIC AMERICAN Office on account of Patent Office business, for the week ending Saturday, July 9, 1859:—

R. D., of N. H., $55; D. & C., of Conn., $25; W. J. K., of Ga., $20; C. C. B., of Ohio, $10; P. & S., of La., $30; T. C., of Mass., $30; P. M. H., of Pa., $30; J. M., of Ill., $10; S. M. C., of Mass., $275; J. W., of N. Y., $30; I. M., of N. Y., $10; J. F. S., of Pa., $35; L. K., of N. Y., $30; F. J. P., of Tenn., $30; H. C., of Ga., $25; L. M., of Wis., $25; A. L. E., of N. Y., $25; S. B., of Va., $30; G. M. of Ill., $25; W. McE., of Ind., $30; M. D., of Mass., $250; A. G., of N. Y., $50; E. D., of La., $140; A. McA., of N. Y., $25; T. L. B., of N. Y., $30; A. E. & S. N. McG., of Minn., $10; L. A., of Ohio, $25; N. C., of Ohio, $30; H. C. S., of Ohio, $250; N. J. V., of Ohio, $30; W. A., of Ill., $25; G. & S., of Mich., $30; J. L. B., of Ohio, $30; E. O. B., of Ill., $30; A. H., of Ill., $25; C. & M., of Ind., $25; A. W., of Conn., $25; L. & J., of N. Y., $25; J. B., of Pa., $30. F. A. B., of Ct., $30; J. O. D., of N. Y., $30; L. & W., of Miss., $25; C. W. R., of Pa., $50; I. R. S., of Va., $35; T. H., of L. I., $30; R. D., of Mich., $30; A. L., of ——., $20; G. S. Van S., of Va., $30; J. A. & A. F. D., of N. Y., $25.

Specifications, drawings and models belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, July 9, 1859:—

G. C. of Miss.; W. J. K. of Ga.; A. W. of Ct.; B. & B. of Ill.; L. & W. of La.; H. C. of Ga.; C. & M., of Ill.; D. & C. of Conn.; E. O. B., of Ill.; L. A., of Ohio; J. R. S., of Va., G. M. Jr. of Ill.; H. G. of La. (2 cases); L. & J. of N. Y.; A. McA. of N. Y.; M. C. K. of Iowa; A. L. E. of N. Y.; A. H. of Ill.; J. A. & A. F. D. of N. Y.; E. D. of La. (2 cases); H. T., of N. J.; W. A. of Ill; J. D. of N. Y.

Rates of Advertising.

Thirty cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement sent for publication.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the SCIENTIFIC AMERICAN, continue to procure Patents for Inventors in the United States and all foreign countries on the most liberal terms. Our experience is of thirteen years' standing, and our facilities are unequaled by any other Agency in the world. The long experience we have had in preparing Specifications and Drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between NINE and FOUR o'clock, daily, at their PRINCIPAL OFFICE, No. 37 PARK ROW, NEW YORK. We have also established a BRANCH OFFICE in the CITY OF WASHINGTON, on the CORNER OF F AND SEVENTH-STREETS, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business we have Offices at Nos. 66 Chancery Lane, London; 29 Boulevard St. Martin, Paris, and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European Patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to Inventors. Any one can take out Patent there.

A pamphlet of information concerning the proper course to be pursued in obtaining Patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the Principal Office or either of the Branches. We also furnish a Circular of information about Foreign Patents.

The annexed letters from the last two Commissioners of Patents we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.:—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers. Yours, very truly,

CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you discharged your duties as Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability, and uncompromising fidelity in performing your professional engagements. Very respectfully,

Your obedient servant, J. HOLT.

Communications and remittances should be addressed to

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No. 37 Park-row, New York.

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TO GASMAKERS.—THE SUBSCRIBER, INVENtor and Patentee of a new method of purifying gas by means of water alone, an improvement, the utility and simplicity of which, with the great saving in expense, recommends itself to all gasmakers, and must be adopted by all as the only proper way to purify gas, is now ready to negotiate for individual, town, city, county, or State rights for the use of his patent. Address AURELIUS DICKINSON, Claremont, N. H. 4 2*

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FARMERS, READ THIS.—"THE FARMERS' OWN PAPER."—THE GENESEE FARMER, a Monthly Journal of Agriculture and Horticulture.—(Established in 1831.)—Published for twenty-eight years in one of the finest wheat and fruit sections of America; it has attained an unrivaled circulation, and has able and experienced correspondents in every State of the Union and in the British Provinces. Each volume contains three hundred and eighty-four pages, and is profusely illustrated with expensive wood-cuts. It is sent to any address for Fifty Cents a Year! In order to introduce the FARMER into districts where it has few readers, we will take subscriptions to the coming half-volume (July to December inclusive) at the following rates:—Single subscribers, 25 cents: five copies for $1, and a copy of our beautiful 25-cent book, the "Rural Annual and Horticultural Directory," prepaid by mail, to the person getting up the club; Eight copies for $1 50, and a "Rural Annual," prepaid by mail, to the person getting up the club; sixteen copies for $3, and a "Rural Annual" and an extra copy of the FARMER for a year, or two for the half-volume, to the person getting up the club.

We also offer a liberal list of Cash Premiums as a still greater inducement to form clubs. Full particulars will be found in the paper, and everyone interested in the culture of the soil is invited to send for a copy, and, if pleased with the paper, to act as agent. Specimen copies sent free to all applicants. Address JOSEPH HARRIS, Publisher and Proprietor, Rochester, N. Y. 1 4*

AMERICAN RAILWAY TIMES—ESTABLISHED IN 1849.—Devoted to the Construction, Operation, Management and Finances of Railways; Machinery, Civil and Mechanical Engineering, Railway Law, Iron Manufacture, Movements of Capital, Money and Stock Market, &c., &c. It likewise contains a very full United States Railway Share and Bond List, corrected every week, showing the miles open, capital stock, funded debt, cost, receipts and net earnings, dividend, and the latest current prices of stocks and bonds of most of the Railways in the country. The extensive circulation of the RAILWAY TIMES among Railway Superintendents, Presidents, Directors, Stockholders, Master Mechanics, Car and Track Masters, Contractors, Locomotive and Car Builders, Machinists, Civil, Mechanical and Locomotive Engineers, Manufacturers, Supply Agents, Bankers, Capitalists, Brokers, and others throughout the country, renders it an unequaled medium for Advertising. JOHN A. HAVEN, Editor and Proprietor,

Subscription price, $3 per annum. [1 4*] Boston, Mass.

THE AUBIN VILLAGE GAS WORKS WERE erected last year by gas companies in several States and in Canada. The success attending these works has already led to the erection of one city and one village work this season, has secured three village works for immediate erection, and so nearly secured five more that they may be relied on before August next. For reference apply to the Aubin Company, No. 44 State-street, Albany, N. Y. 1 13

WANTED—TWO HAND-PRESSES FOR PRESSING BRICKS.—The bricks, made of concrete stuff, are molded in mud machines in the usual way, and the hand-presses are intended to press the bricks as soon as the stuff begins to set. Communications will be received by R. NEISCH, No. 508 Fourth-street, New York. 2 2*

NORVELL'S CHOKING STRAP FOR BRIDLES AND HALTERS.—The most perfect invention ever made to subdue and make gentle all wild, vicious or runaway horses, mules and colts. It has never failed to perform a perfect cure in any instance. Rights for sale. Descriptive circulars sent gratis. Apply to R. B. NORVELL, Patentee, Huntsville, Ala. 2 4*

PLANING AND MOLDING MILL FOR SALE IN BOSTON.—Now doing a good business. Engine 30 horse power, with all kinds of first quality machinery for a custom business. The proprietor has been eight years in the business, and ill health compels him to retire. The whole, including land and building, will be sold at a great bargain on easy terms, or a silent interest retained. For particulars address L. DAGGETT, Planing and Molding Mill, Boston, Mass. 2 3*

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MERCHANTS DEALING IN HARDWARE, Planished and Britannia Ware, Pressed and Japonica Tinware, &c., are requested to communicate with a cash customer, giving a catalogue, prices and terms. Address box 1,842, Post-office, Detroit, Mich. 1*

MARINE RAILWAY.—WANTED, A COMPETENT man, who is able to invest a few hundred dollars in a Marine Railway, and take the entire charge of the same. The works are nearly completed, and are situated in a flourishing city in Florida; this is a favorable opportunity for a ship-carpenter wishing to engage in the business, as there would be plenty of business in the way of repairing and building vessels. For particulars in regard to location and prospects, inquire of J. HOLMES, No. 88 Wall-street, New York. 3 4*

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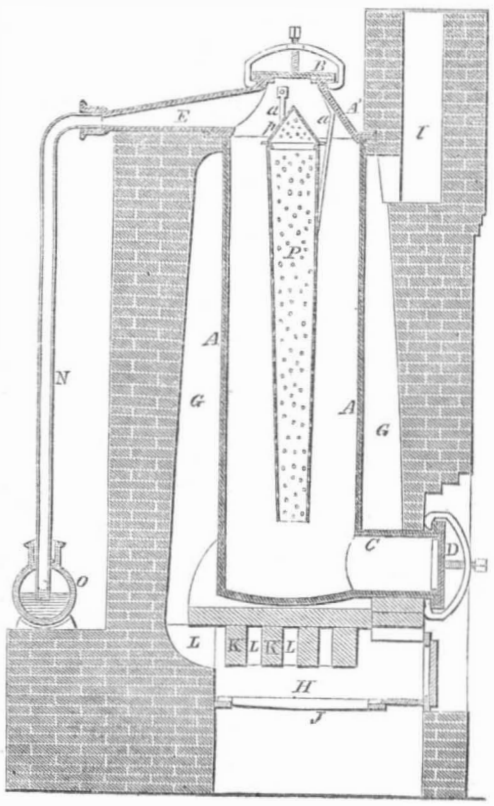


in it consists in the employment, within an upright retort and at or near the center of it, of a perforated tube, through which the vapors, or a great portion of them, can escape to the exit-pipe as fast as they are eliminated, without being forced into contact with the heated sides of the retort. In the ordinary retort, owing to the packing of the coal in the center, a considerable portion of the vapors are brought into contact with the highly heated surface of the sides, and thus tends to lessen the amount of oil by promoting destructive distillation. The packing of the coal in the center of the old retort also prevents the rapid outflow of the vapors, both of which evils are obviated by this improvement.

A is the upright cylindrical retort having a detachable mouthpiece A' at the top fitted with a cover B, which is removed for charging it. It has a spout, C, at the bottom, fitted with a door, D, which is opened to draw out the coke or other residuum of distillation. E is the exit spout attached to the mouthpiece A'. The retort is built in a furnace, F, within which it is surrounded by a flue, G G, up which the flame and gaseous products of combustion pass from the fire-place, H, (which is situated under the bottom of the retort) to the chimney, I, near the top thereof. A large tile is placed under the bottom of the retort to prevent its being burned, and it is interposed between the bottom and the piers, K K, which support it. The communication between the fire place, H, and the upright flue, G G, is by means of a number of small flues, L L. The exit spout communicates in the usual manner by an escape pipe, N, with the hydraulic main, O, from which there is the usual means of communication with the condensing apparatus.

P is the vapor tube, which constitutes the invention. It is made either of cast or strong sheet iron, and its diameter is from one-fourth to one-third that of the retort. It tapers slightly towards the bottom, and extends downward as near to a level with the top of the spout, C, as it can be permitted to do, without interfering with the operation of drawing out the coke. It extends upwards nearly to the top of the retort, and its bottom being open, any small particles of coal that may pass through the perforations drop out. Its top is covered with a conical cap, *p*, for the purpose of causing the equal distribution of the charge round the sides of the retort. The tube, P, is suspended from the mouthpiece by iron straps, *a a*, which are applied to brace one another, and at the same time not to interfere with the introduction and distribution of the charge. The perforations in the tube and its cap are about three-eighths of an inch in diameter, and they are placed as close together as is consistent with its strength.

This perforated tube, P, besides providing for a free escape of the oil vapors as they are generated at a comparatively low temperature, by directing them away from the highly heated sides of the retort (by which they are liable to be converted into permanent gas), also reduces the lateral thickness of the body of coal in the retort, and enables the heat to penetrate the charge more uniformly and perfectly, whereby not only a larger quantity of oil is obtained from the same weight of coal, but a charge is worked off in a shorter space of time than in a common stationary retort.

For further information, address J. E. Holmes, or J. Palmer, who is associate assignee, No. 190 Duane-street, this city (New York).

In our next number we expect to be able to give some new and interesting information regarding the manufacture of coal oils.

HOWLAND'S DOOR-LATCH.

This door-latch, the object of which is to only require an auger-hole to be bored in the door, when it can be applied, is shown in our engravings—Fig, 1 being a longitudinal vertical section of a latch applied to a door, and Fig. 2 a horizontal section of the same taken in the line *y y*, of Fig. 1.

A represents what may be termed the case of the latch, said case being formed of two parallel parts, *a*, *a*, connected at their front ends only by a cross-piece, *b*, which serves as a guide for a rod, B, at the end of which the latch, C, is attached.

The attachment of the latch to the shank or rod, B, is effected by the means of a female screw-socket, *s*, formed in the latch, and a male screw-thread, *t*, formed on the shank or rod, B.

Fig. 1

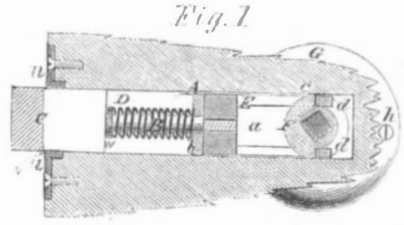
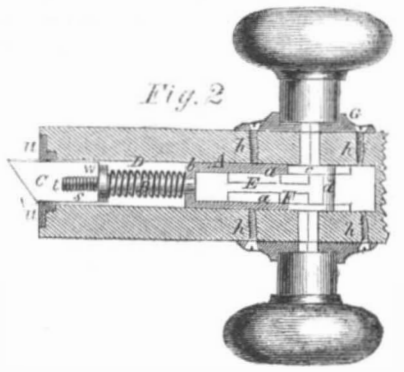


Fig. 2



The latch, C, is of the usual form, leveled at one side, as shown clearly in Fig. 2, and is arranged to slide back and forth through a guide-plate, *u*, which has a square opening, *v*, cut through it corresponding to the latch. The shank or rod, B, has a shoulder, *w*, formed on it, as shown; between the shoulder, *w*, and guide or cross-piece, *b*, of the case, A, and on the rod, B, a spiral spring, D, is placed, said spring having a tendency to keep the latch forced to its fullest extent from the end of the case, A.

The inner end of the rod, B, screws into the end of a plate, E, which is slotted longitudinally, and is allowed to slide freely in the case, A. The inner end of the plate, E, fits over a tumbler, F, through which the spindle of the knob passes, said tumbler having two shoulders, *c*, *c*, on it, which should catch against cross-heads, *d*, on the sliding-plate, E.

The tumbler, F, is fitted in the inner part of the case, A, and is allowed to turn freely therein, and the shoulders, *c*, on the tumbler, when said tumbler is turned, actuate or force back the plate, E, and consequently the rod, B, and latch, C. The case, A, is fitted in the door by simply boring an auger-hole therein, and the case, A, does not require to be any wider than the latch. No mortising or trimming up with the chisel is required. A hole is made transversely through the door to allow the spindle of the knob to pass through the tumbler, F.

The shrinkage or swellage of the door is allowed for by screwing the latch farther on or off the shank or rod, B. This is effected by withdrawing the knob that passes through the tumbler, F, and pulling out the latch until its rear end extends forward of the front of the guide-plate, *u*, and then turning the latch free of its shank or rod, B, so as to cause it to extend a shorter or greater distance from the guide-plate, *u*, or in proper position with the edge of the door and the nosing of the jamb to readily enter and remain in the nosing of the jamb, however much the door may be shrunk or swelled. It should be particularly observed that the foregoing adjustments are effected without affecting the tension of the spring, for the reason that the spring is arranged between the shoulders, *w*, and the cross-piece, *b*, of the stationary case, A. It is very important not to affect the spring in accomplishing the adjustment, for when the spring is affected, as in other cases, it either becomes too elastic or remains nearly unelastic, according as the adjustment is made.

The plate, E, working in the case, A, forms a perfect guide for the rod, B, and as but a small auger-hole is required to receive the case, A, the screws, *h*, of the knob-plates, G, may be screwed into solid wood and be firmly secured.

The inventor is Mark Howland, of Waterbury, Conn., and he will be happy to furnish any further information. The patent is dated May 31, 1859.

A new submarine cable has been laid between England and France, which weighs no less than ten tuns per mile. It is the largest and strongest telegraph cable ever made, and contains six conducting wires, each of which is said to be as large as the whole number in the Atlantic cable.

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